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MISCELLANEOUS PUBLICATIONS NOS. 5--6.

1. CATALOGUE OF PHOTOGRAPHS.

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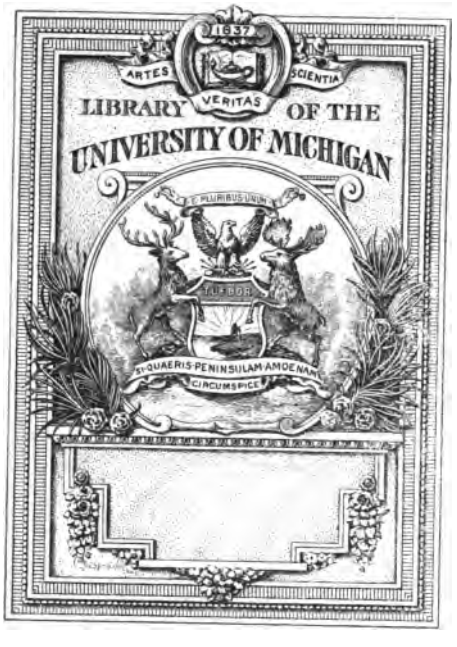
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DEPARTMENT OF THE INTERIOR.

UNITED STATES GEOLOGICAL SURVEY OF THE TERRITORIES.

F. V. HAYDEN, U. S. GEOLOGIST-IN-CHARGE.

MISCELLANEOUS PUBLICATIONS—No. 5.

DESCRIPTIVE CATALOGUE

OF

THE PHOTOGRAPHS

OF THE

UNITED STATES GEOLOGICAL SURVEY

OF

THE TERRITORIES,

FOR

THE YEARS 1869 TO 1875, INCLUSIVE.

SECOND EDITION.

W. H. JACKSON, Photographer.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1875.

MOUNTAIN OF THE HOLY CROSS.

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PREFACE.

It has been customary, heretofore, merely to catalogue the results of each season's operations in a few pamphlet pages of numbers and titles only; but the increasing interest in and demand for the more striking views, calls for a complete descriptive account of the collection, and I have endeavored, in the following pages, to supply as much information as the somewhat limited space allows. The descriptions are mainly compiled from the reports for the corresponding years.

The collection, thus far, numbers upward of two thousand landscape-negatives, the greater portion of them of subjects that had never been taken, and probably will not be for many years to come, or until the country has advanced into civilization. By no other means could the characteristics and wonderful peculiarities of the hitherto almost unknown western half of our continent be brought so vividly to the attention of the world. That they are appreciated, the demand for them, from all quarters of the globe, amply testifies.

During the last two seasons, especial attention has been paid to the archæology of the pre-historic races of the Southwest. The photographic impressions which have been secured of those wonderful remains have excited universal interest, and are already incorporated into the best works of reference and accepted authorities upon the subject. With the exception only of the present inhabited Moquis Pueblos, these are the first illustrations, of any kind, which have ever appeared before the world, of the scenes they represent.

Another new feature is the addition to the collection of a series of landscape-negatives, 20 by 24 inches square, of views around the Rocky, San Juan, and Uncompagre Mountains of Colorado. These are the largest plates ever used in field-photography in this country. They convey an impression of the real grandeur and the magnitude of mountain scenery that the smaller views cannot possibly impart.

The Indian catalogue includes a list of over one thousand subjects and sixty-six tribes, representing nearly every portion of the western Territories, and their value to the ethnography of the aborigines will soon be very great. They are mostly studies of their habits and costumes, taken in their own villages and among their own mountains, showing their every-day life. They are fast passing away or conforming to the habits of civilization, and there will be no more faithful

record of the past than these photographs. To their future historian they will prove invaluable.

The subjects made under the direction of this survey formed the nucleus, to which has been added nearly one thousand negatives, through the munificent liberality of Wm. Blackmore, esq., a wealthy English gentleman, deeply interested in ethnography. The addition is especially valuable, as it embraces many other collections, dating back twenty years.

Especial attention is being paid to the subject each season, and additions made to the collections upon every opportunity.

1869 SERIES.

(Negatives, 8 x 10.)

The Union Pacific Railroad, Salt Lake City and Valley, and the Black Hills of Wyoming; embracing the most prominent pictorial features on the route of the great national highway. Photographed immediately upon the completion of the road in the summer of 1869.

No. 1. NORTH PLATTE RIVER, looking north from bridge.

No. 2. BRIDGE OVER THE NORTH PLATTE RIVER, near its intersection with the South Platte.

No. 3. WIND-MILLS AT NORTH PLATTE STATION. At this point the Platte River runs through an almost entirely treeless plain, with but very few objects in nature to relieve the dead monotony, so that the windmills, which occur at nearly all the stations, for the purpose of raising water to the tanks, form a very prominent feature in the landscape. The river is very wide, shallow, and swift, running over bars and quicksands, with many little willow-covered islands.

The north and south forks rise respectively in the North and South Parks of Colorado, and flow some 1,200 miles to their junction with the Missouri.

The bridge and station are about 290 miles west of Omaha, and have an altitude of 2,827 feet above the sea.

No. 4. SHERMAN STATION, upon the broad, plateau-like summit of the Black Hills, 8,271 feet above the sea, and 2,196 above Cheyenne, only 33 miles to the eastward. Sherman, named in honor of the commander of the United States Armies, enjoys the distinction of being the most elevated railway-station in the United States.

No. 5. REED'S ROCK, near Sherman, forms an excellent illustration of the style of weathering of the granites, characteristic of this region. These massive piles, like the ruins of old castles, are scattered all over the summits of the Black Hills, and the difference in the texture of the rock is such as to give a most pleasing variety of outline. They were once angular, cube-like masses, and have been worn to their present forms by the process of disintegration by exfoliation.

No. 6. GRANITE CUT, near Dale Creek Bridge, about three miles west of Sherman. The road has been drilled and blasted through a close, compact, and massive granite that is susceptible of a high polish, much like the Scottish syenite.

No. 7. DALE CREEK BRIDGE, over Dale Creek, a small tributary of the Cache La Poudre, flowing into the South Platte. The bridge is a wooden frame-work structure, 650 feet long and 127 high, the largest of its kind on the road.

No. 8. DALE CREEK CAÑON, a view looking south from near the bridge. A characteristic view of the summit of the Black Hills, showing the castle-like granite bowlders and scattered pines, the deep cañon with its pleasant vale, and the sparkling trout-stream, glittering in the sunlight.

No. 9. VALLEY OF THE NORTH PLATTE, near Fort Fred Steele, the second crossing of the river, 696 miles west from Omaha, and with an altitude of 6,845 feet. Unlike itself out upon the plains, it is here a deep, clear, cold stream, not far from its sources among the perpetual snows of the Rocky Mountains.

No. 10. GREEN RIVER BUTTE, near view.

No. 11. GREEN RIVER BUTTE, from across the river.

No. 12. TEAPOT ROCK, near Green River Station.

No. 13. GIANT'S CLUB, near Green River Station.

No. 14. ROCK FORMS, near Green River Station.

No. 15. PETRIFED FISH CUT, near Green River Station.

No. 16. BURNING ROCK CUT, near Green River Station.

Nos. 17–20. Views along the west bank of Green River between the station and Burning Rock cut. The above group (10 to 20) represents the curious and unique scenery of Green River at the point where the railroad crosses it, 845 miles west from Omaha, and 6,130 feet above tide-water.

The formation which gives this region its characteristic features is known as the Green River shales, from the sediments being arranged in regular layers, mostly quite thin, but varying from the thickness of a knife-blade to several feet.

This laminated character, with the variations in shade and color, give to the hills the peculiar banded appearance, as shown in all the pictures of the above series.

In 10 and 11 we have the Castellated Butte, so prominent a landmark to all travellers, with an elevation of some 800 feet above the river. The upper portion, or Castle, is 200 feet high. Nos. 12, 13, and 14 are excellent examples of the curious and fantastic shapes which the shales have assumed in the process of weathering, suggesting the titles which have been given them. They have an average height of 200 feet.

No. 15 is so called from the thousands of perfect and beautiful impressions of fish which are shown on the thin slabs of shale; sometimes a dozen or so within the compass of a square foot. Impressions of insects and water-plants are also sometimes found.

No. 16 is a view a short distance west of the preceding ones, where the road is cut through thin layers of a sort of cream-colored, chalky limestone, interspersed with strata of a dark-brown color, so saturated with petroleum as to burn freely. This cut is called the Burning Rock, from the fact that during the progress of the work the rocks became ignited and burned for some days, illuminating the labors of the workmen by night, and filling the valley with dense clouds of smoke by day.

The remaining views, 17 to 20, are glimpses along the west bank of Green River between the places described above, showing to good advantage the wall-like and castellated forms on the opposite side of the river.

Nos. 21, 22. WASATCH, UTAH, 966 miles west from Omaha, altitude 6,870 feet, on the divide between Echo Cañon and Bear River.

From this point the descent is very rapid into the famous cañon. Two miles farther on we come to and pass slowly over an immense trestle-work, as shown in—

No. 23, being 450 feet long and 75 feet high.

A short distance farther and we shoot into—

No. 24. TUNNEL No. 2, the longest on the road, 770 feet in length, cut through reddish and purplish indurated clays, of the Wasatch group of Miocene Tertiary. Descending rapidly we reach—

Nos. 25, 26. CASTLE ROCKS, at the head proper of Echo Cañon, 975 miles west from the Missouri and 6,282 feet elevation. They are of a massive red sandstone from 500 to 800 feet high, which have weathered into these curiously castellated forms.

Nos. 27, 28. TOWER ROCKS, or pinnacles upon the face of the castle. The rocks bear a remarkable resemblance to some old dismantled fortress, with its towers, crumbling walls, and immense embrasures.

No. 29. PULPIT ROCK, at the mouth of Echo Cañon, 991 miles from Omaha, and 5,507 feet above the sea. The railroad sweeps around it in a graceful curve, and so near that one might reach from the car window and touch it. The isolated rounded mass above, which seems to stand alone and almost ready to tumble into the valley below, is yet quite firmly seated on its bed of sandstone. It is said that once upon a time Brigham Young held forth to his flock from this rock during their pilgrimage hither. This view shows admirably the coarse conglomerate or pudding-stone, characteristic of all the Echo Cañon rocks.

No. 30. SENTINEL ROCK, one of the most remarkable landmarks in the cañon. It is a regular obelisk of conglomerate, standing near the junction of Echo with the Weber Cañon. It is about 250 feet in height, and affords another excellent illustration of the peculiar style of weathering, by which rocks assume curious forms. This column has been very aptly called the "Dog's Head," to which it will be seen at a glance that the summit bears a resemblance.

The varied structure of the strata, sometimes a firm sandstone, then a pudding-stone, is remarkably well displayed in this view.

The same variations of structure, on a still larger scale, may be seen in—

No. 31. THE GREAT EASTERN, a perpendicular bluff 1,000 feet in height, bearing a strong resemblance to the prow of an enormous steamship. In this the inclination of the strata is well shown. The base is composed of fine sandstone, running into a coarse conglomerate above.

No. 32. LOOKING DOWN ECHO from above the Great Eastern, and about two miles above the mouth of the cañon, giving a general view. On the right, the high perpendicular walls, with the strata dipping down westward, are cleft by deep gorges, leaving the intermediate portions standing out like huge castles, massive in form and a vivid red in coloring. On the left, the hills are equally high, but run off into more rounded forms, which are clothed in the spring-time with a bright contrasting green.

No. 33. A STUDY AMONG THE ROCKS OF ECHO, a mass of *débris* which has fallen from the overhanging walls.

No. 34. THE AMPHITHEATER, an immense semicircular wall of 1,000 feet in height, three miles above the mouth of the cañon, showing the largest and most perfect wall-surface in the cañon.

Leaving Echo, and turning down Weber Cañon, we glide smoothly and swiftly along, passing the wonders of the "Narrows," the "1,000-mile Tree," "Devil's Slide," &c., (see stereoscopic views,) reaching the main Wasatch range, and pass through the Lower Weber Cañon. Half way through we come to—

No. 35. THE DEVIL'S GATE.

Nos. 36–39. DEVIL'S GATE BRIDGE. The most attractive feature of the cañon is the roar of the waters of the Weber as they roll over the immense masses of rock in its bed, with the rush and tumult of a mountain-torrent. For four miles we are inclosed with nearly perpendicular walls of gneiss, 2,000 feet in height, forming the central portion of the Wasatch Mountains; the river rushing through it at right angles. The rocks are beautifully banded everywhere. There are also coarse aggregations of quartz and feldspar all along the sides of this channel; and high up on the steep mountain-flanks are vast deposits of bowlders and fine sand.

Soon we emerge from the partial darkness into a broad, fertile valley, and glancing back from—

No. 40. UINTA, we have a view of that portion of the Wasatch range through which we have just passed.

Nos. 41–43. GREAT SALT LAKE CITY, UTAH. A view looking south from the bluffs just north of the city, giving a bird's-eye view and also a view of the Wasatch Mountains in the distance.

In the center of the first view are grouped the many fine buildings of President Young. The one with the many gable windows is the "Lion House," the abode of his numerous wives, while the one just to the left of it is the "Bee-Hive" House, his own private residence. The houses are so called from the emblems placed on them. Plainly visible are also many others of the finest private and public buildings.

In No. 42 the eye catches at once the glistening white dome of the great Mormon Tabernacle. In No. 43 are the suburbs to the southwest, with glimpses of the Jordan, and the Oquirrh Mountains.

No. 44. THE GREAT MORMON TABERNACLE. Near view of a most conspicuous building, that always attracts the eye of the traveler as he enters the city. The building is oblong in shape; 250 feet in length by 150 in width. The great dome is supported upon forty-six pillars, which serve as a sort of wall, from which the roof springs in an unbroken arch. This building will seat 7,000 persons, and 10,000 may be gathered within its walls upon extraordinary occasions.

No. 45. CORINNE, UTAH, at the head of Salt Lake, and on Bear River, near its entrance to the lake; an important place on the railroad, as being the point of departure for Montana, Idaho, &c. Here the stages and freight-teams depart upon their long journeys, and their arrival and departure create considerable stir in the otherwise very quiet little place.

STEREOSCOPIC VIEWS.

Views of the Union Pacific Railroad from Cheyenne to Promontory Point, including studies among the Black Hills of Wyoming, and of Great Salt Lake City.

As the stereographs are but duplications of the larger ones in the preceding series, no detailed description will be given, except in those cases where they are the only representation of the scene.

In referring back for description, the subject will be found under the same general titles as below.

From the wear and tear of long use, and unimportance, many of the negatives have been withdrawn from the list, leaving the numbers in a somewhat chaotic condition; but, as many of the views have become well known by their numbers, it was deemed best to retain them.

No. 60. DEPOT AT CHEYENNE, 516 miles west from Omaha; 6,041 feet elevation.

Nos. 65, 66. PROMONTORY POINT, the spot where the track-layers met and laid the "last rail;" elevation, 4,905 feet.

No. 67. THE ORIGINAL DEPOT AT PROMONTORY; a primitive state of affairs, incident upon the rapid construction of the road.

Nos. 68, 69. STEET VIEWS IN CORINNE, UTAH.

No. 71. UINTAH, UTAH, mouth of Weber Cañon.

Nos. 77–80. DEVIL'S GATE, Weber Cañon.

Nos. 81–85. DEVIL'S GATE BRIDGE, looking down and up, and from above and below.

No. 86. EAST FROM DEVIL'S GATE.

No. 87. WEST END OF TUNNEL NO. 4; a rock cut of 150 feet in Weber Cañon.

No. 88. WEST FROM THE MOUTH OF TUNNEL NO. 4.

No. 89. WEST FROM THE SUMMIT OF THE RIDGE THROUGH WHICH TUNNEL NO. 4 IS CUT, looking over Round Valley, to the Wasatch Mountains, in the distance.

No. 90. EAST OF TUNNEL NO. 4.

Nos. 91–95. VIEWS BETWEEN TUNNELS NOS. 3 AND 4, a space of about half a mile, but full of grand and picturesque effects.

Nos. 96, 97. TUNNEL NO. 3, FROM THE EAST; a cut of 550 feet through solid limestone.

Nos. 98, 99. THE 1,000-MILE TREE, a solitary pine in Wilhelmina Pass, or the narrows of Weber Cañon, marking the 1,000th mile west of Omaha.

No. 100. SECTION-MEN; a group of railroad laborers on a hand-car.

Nos. 100, 102. THE DEVIL'S SLIDE, Weber Cañon, three miles below the 1,000-mile tree; two parallel ridges of limestone from 50 to 250 feet in height, running up the mountain-side for 1,000 feet.

No. 103. WILHELMINA PASS, or the narrows; the entrance to Weber Cañon proper, seven miles below the mouth of Echo Cañon.

No. 104. PULPIT ROCK, mouth of Echo Cañon.

No. 105. DEATH ROCK, mouth of Echo Cañon.

No. 106. SENTINEL ROCK, mouth of Echo Cañon.

No. 107. THE GREAT EASTERN, mouth of Echo Cañon.

Nos. 108, 109. LOOKING DOWN ECHO CAÑON, near the mouth.

No. 110. CAMP VIEW; under the rocks of Echo.

No. 111. LOOKING DOWN THE CAÑON, from above the Great Eastern.

Nos. 112, 113. STEAMBOAT ROCK.

Nos. 114–123. STUDIES AMONG THE GREAT ROCKS that have fallen from the cliffs of Echo Cañon.

Nos. 124, 125. THE AMPHITHEATER, Echo Cañon.

No. 126. CASTLE ROCKS, from the station.

No. 127. TOWER ON CASTLE ROCK.

Nos. 128, 129. CASTLE ROCK, near view.

No. 130. CASTLE ROCK, distant view.
No. 131. WALLS OF CASTLE ROCK.
Nos. 132, 133. TUNNEL No. 2 at the head of Echo Cañon.
Nos. 134–137. HIGH TRESTLE WORK; between Tunnel No. 2 and Wasatch.
Nos. 138, 139. EICHAR'S CUT, between Tunnel No. 2 and Wasatch.
No. 140. HIGH TRESTLE below Tunnel No. 2.
No. 141. MOUNTAIN CEDAR.
No. 142. CUT NEAR WASATCH.
Nos. 143–145. "THE OLD Z," or a portion of the track at the head of Echo before the completion of the tunnel.
No. 146. WASATCH, UTAH.
Nos. 147–150. NEEDLE ROCKS, near Wasatch, on the old stage-road.
No. 151–155. BIRD'S-EYE panoramic view of Great Salt Lake City.
No. 156. MAIN STREET, Great Salt Lake City.
No. 157. THE TABERNACLE.
No. 158. THE OLD TABERNACLE.
No. 159. SIGNS OF THE MORMON CO-OPERATIVE INSTITUTION.
Nos. 161, 162. TOWER ON CASTLE ROCK, Echo Cañon.
No. 163. REED'S ROCK, near Sherman Station.
No. 164. GREEN RIVER BUTTE.
No. 168. TEAPOT ROCK, Green River.
No. 169. VIEW ON THE WEST BANK OF GREEN RIVER.
No. 172. BURNING ROCK CUT, Green River.
No. 174. VIEW ON THE WEST BANK OF GREEN RIVER.
No. 175. GREEN RIVER BUTTE AND BRIDGE.
No. 176. GREEN RIVER BUTTE AND BRIDGE, near view.
No. 177. PETRIFIED FISH CUT, Green River.
No. 178. GIANT'S CLUB, Green River.
No. 179. WEST BANK OF GREEN RIVER.
No. 181. EAST FROM GREEN RIVER.
Nos. 182, 183. SHERMAN STATION, summit of Black Hills.
No. 184. DALE CREEK CAÑON.
No. 185. DEVIL'S GATE OF DALE CREEK.
No. 187. BRIDGE OVER THE NORTH PLATTE, first crossing.
Nos. 188, 191, 192, 194. DALE CREEK BRIDGE, Black Hills.
No. 195. THE NORTH PLATTE, at Fort Fred Steele.
Nos. 196–199. DALE CREEK BRIDGE, Black Hills.
Nos. 200–249. ARE OF INDIAN SUBJECTS which have been incorporated into the Indian catalogue in this same volume.

The following fourteen views are among the curiously eroded granites in the Black Hills, about five miles north of Sherman Station.

Nos. 250–251. THE PIONEER'S HOME.
Nos. 252–258. VIEWS ABOUT THE HEAD OF CROW CREEK.
Nos. 259–264. ROCK STUDIES, head of Crow Creek.

1870 SERIES.

(Negatives $6\frac{1}{2} \times 8\frac{1}{2}$.)

A series of views made during the summer of 1870, commencing at Cheyenne, about August 1, and terminating at Colorado City, November 10, covering a great portion of the little known but extremely picturesque and interesting scenery of the Black Hills of Wyoming, the North Platte and Sweetwater Rivers; South Pass, and the Mauvaises Terres, about Fort Bridger; thence into the Uinta Mountains; down Green River; through Bridger's Pass, to Fort Sanders, and from there along the foot-hill ranges to Pike's Peak, in Colorado. The very limited time given for preparation, the lateness of the season, and the large extent of territory covered, rendered the work extremely arduous. Nearly all the views were obtained while upon "side-trips," a small detachment visiting the more interesting portions of the surrounding mountains, or cañons, while the main train pursued its way along the valleys.

No. 47. CAMP NEAR CHEYENNE, at Fort D. A. Russell. The rendezvous camp where the survey was organized and equipped for field-service.

No. 48. "HOGBACKS." A very characteristic features of the foot-hill ranges of the Rocky Mountains are the Hogback ridges, extending along their eastern face. Our view shows one just north from Horse Creek, which has been cut at right angles by the mountain streams. It is composed of the Triassic and Carboniferous beds, with a trend north and south. Between it and the granites which rise up into the main range a valley has been scooped out by some erosive force, from five to ten miles in width, extending from the head of Crow Creek to the Chugwater.

No. 49. LOOKING OUT UPON THE PLAINS, from near the head of Horse Creek, the shore-line and bed of an ancient lake, showing the effects of the erosive force from the mountains plainwards.

Nos. 50–52. CASTELLATED ROCKS on the Chugwater. A very conspicuous feature which we notice in descending the valley of the Chug is the high bluff of Lower Cretaceous sandstone, which stretches away toward the northeast like a huge wall. The jointage is so regular that it presents the appearance of massive mason-work gradually falling to decay. The sides of these sandstone walls are from 40 to 60 feet perpendicular, sometimes overhanging, large masses of which have broken off and fallen to the base. Their most striking feature, however, is to weather into most picturesque castellated forms. The valley of the Chug is 100 miles long, and is a favorite place to winter stock.

No. 53. LARAMIE RIVER AND VALLEY, looking northeast.

No. 54. BAD-LANDS on Laramie River. From the Chug, we cross table-like plains for ten miles, and descend to the beautiful valley of the Laramie. The Tertiary rocks near the crossing have weathered into quite remarkable architectural forms, much

like those of White River of Dakota. The texture is similar also, with marls and calcareous concretions, passing up into fine sandstones, which decompose so readily that the valleys and the hills are covered with loose sand.

No. 55. GRANITE ROCKS, near eastern base of Laramie Peak. As we approach the base of the mountains, the red feldspathic granites rise in thick picturesque ridges, 50 to 100 feet high, like ruined walls, lending a peculiar as well as picturesque appearance to the landscape.

The granites afford most excellent rock studies of their kinds. The tendency to weather into rounded forms by exfoliation and the jointing are finely shown. The principal lines of fracture are mostly continuous, and have a strike east and west, while the other set trend nearly north and south.

The tendency to exfoliate by the stripping off of their concentric layers has enlarged the openings, sometimes several feet. The granites are thus divided in regular rhomboidal masses, many of which have fallen down at the foot of the ridges, and by exfoliation have become so rounded that they appear like immense transported bowlders.

The texture of the rock is an aggregate of large crystals of reddish feldspar, with quartz and mica, the feldspar so predominating that it gives the character to the rock.

No. 56. LARAMIE PEAK. View from a distance.

No. 57. LARAMIE PEAK. Near view from the head of Bitter Cottonwood Creek. The valley of this little stream, of which the view gives us a good idea, is a series of beautiful park-like openings, extending away up into the mountains, and is a favorite resort of the wild game so plentiful in this region. The peak itself, which is the highest point north of Long's Peak, is a little less than 10,000 feet in height, but usually retains no snow upon its summit after May.

It is just about the center of the range, and rises far above it, a most prominent landmark for a great distance in any direction.

Nos. 58, 59. GRANITE RIDGES, near the eastern base of Laramie Peak, of the same nature as No. 55, but much more extensive.

No. 60. THE FOOT-HILLS of the main peak, and characteristic of the rest of the range.

Nos. 62, 63. CAMP ON THE LA BONTA.

No. 64. COTTONWOODS ON THE LA BONTA.

No. 65. FORD ACROSS THE LA BONTA. A very pleasant and picturesque feature of the La Bonta are the beautiful meadow-like valleys, covered with a luxuriant growth of grass, and the magnificent cottonwoods, with widespreading branches and dense foliage, while all about are dry, parched, sage-covered hills.

No. 66. NATURAL BRIDGE, in the cañon of the La Prele; view from below.

No. 67. NATURAL BRIDGE, La Prele Cañon; view from above. A most marvelous natural curiosity, rivaling its famous namesake in Virginia.

It is situated in La Prele Cañon, about ten miles south from Fort Fetterman, on the North Platte. The cañon is formed by the passage of the creek through a long ridge that ex-

tends from La Bonta to the Red Buttes. Where the La Prele emerges from the cañon, it cuts through the limestone and red beds at right angles, forming a regular gorge, with walls from 50 to 150 feet in height.

At the head of this gorge the stream has at some time changed its bed, passing directly through a point of rocks that extend across the channel. The old bed is now overgrown with trees and bushes, but is 50 feet higher than the present one. The stream must have changed its course, bringing its waters against this rock, and, finding a fissure opening through it, gradually wore its present channel.

It is as perfect a bridge as could be desired. The opening beneath is about 150 feet wide and 50 feet high.

The arch above forms a perfect span from a great tower on one hand to the old bed of the creek on the other.

No. 68. FORT FETTERMAN, named for Bvt. Lieut. Col. William I. Fetterman, killed at the Fort Phil Kearney massacre, December 21, 1866.

Established July 19, 1867, and garrisoned by four companies of infantry. Is situated at the mouth of La Prele Creek, 135 miles north from Cheyenne, and 70 miles from Fort Laramie.

No. 69. FORT LARAMIE, named after an old trapper, was established in 1849, and was once a trading-post of the Northwestern Fur Company. It is noted as being the place where many important treaties have been made with the Indians. Situated on the Laramie River, about two miles above its junction with the North Platte, and on the line of the old overland road to Oregon and California.

No. 70. CAMP ON THE BOX ELDER, twelve miles west from Fort Fetterman, and but a short distance above its junction with the Platte. Contrasting well with the rugged features of the ridge are the smooth terrace-like benches or tables, remnants, probably, of some higher levels not swept away.

Nos. 71, 72. BOX ELDER CAÑON affords a good section through the main ridge, being a much more regular gorge than the cañon of the La Prele.

It is from 600 to 800 feet in depth, entirely of erosion, and so narrow that it is difficult to pass through it on foot, the side walls being perpendicular and sometimes overhanging.

The predominating rocks are calcareous sandstones and some layers of quite fine limestones, with a great variety of texture.

No. 73. CAMP ON THE NORTH PLATTE, near old Fort Caspar, thirty-four miles from Fort Fetterman.

No. 74. BAD-LANDS, near Caspar Mountain. There is here a considerable area covered with light-gray sandstones, which have weathered into most unique forms. They resemble the ruins of some old village, with portions of the stone walls and the chimneys remaining.

No. 75. VIEW FROM CASPAR MOUNTAIN. This mountain is an immense table, that has been lifted nearly horizontally out of the plain some 800 or 1,000 feet. Our view is taken from it, looking out upon the plains toward the Platte, showing the gradual dying away of the hog-backs and terraces into the level valley.

No. 76. RED BUTTES and the North Platte River.

No. 77. CAMP AT RED BUTTES. Our camp at the Red Buttes was pleasantly located on the broad grassy bottoms of the Platte, in a sort of amphitheater, with the red beds rising to a great elevation all around. The Red Buttes are so called from the high ridges, or groups of ridges, on the south side of the Platte, their basset edges bearing eastward toward our camp, and of a bright brick-red in color.

As we approach them from the east, in the afternoon, the rays of the setting sun greatly heighten their effect and bring them out in strong relief, so that we can readily see why they have been such prominent landmarks, and have so long attracted the attention of the traveler.

No. 78. JACKSON CAÑON. A dry gorge, cut down perpendicularly through the limestones some 300 or 400 feet.

No. 79. VIEW WEST ACROSS THE NORTH PLATTE, from above Jackson Cañon, and showing very distinctly an ampitheater, or upheaved ridge of the red beds, forming a half circle.

No. 80. A group of all of the members of the survey, made while in the camp at Red Buttes.

No. 81. VIEW FROM THE SUMMIT OF INDEPENDENCE ROCK, looking down the Sweetwater Valley, and showing very plainly that all this portion of the valley was at one time the bed of a great lake.

Nos. 82, 83. INDEPENDENCE ROCK. A noted landmark for travelers at the time when this route was used. Its base, bordering the old road, is literally covered with names and dates, many of the former well known in the history of the West, and some of them antedating Frémont's time.

The Sweetwater flows immediately along the southern end of it, although on the opposite side of the stream another ridge, continuing toward the southwest, was once connected with it. It is a vast and excellent illustration of disintegration, its rounded form resembling an oblong hay-stack, with layers of rock lapping over the top and sides of the mass. Thin layers have been broken off in part, and huge masses are scattered all around it. On some portions of the sides they lap down to the ground with so gentle a descent that one can walk up to the top without difficulty.

Measured by the odometer, the rock has a circumference of 1,550 yards. The north end is 193 feet in height and the opposite end 167 feet, with a depression in the center of not more than 75 feet in height.

No. 84. DEVIL'S GATE, on the Sweetwater. General view from above.

No. 85. DEVIL'S GATE, on the Sweetwater. View inside the gorge.

Five miles up the valley we come to another well-known locality, the Devil's Gate, a cañon which the Sweetwater seems to have worn through the Granite Ridge, cutting it at right angles. To one side, but a short distance, is a low natural depression, a few feet above the present bed of the stream, through which it must have once flowed; and the mind is very much perplexed to account for its digression through this great solid wall of granite rock. The current is not strong, finding its way among the huge masses which have fallen down from above without difficulty, and with a gentle, soothing music not common to mountain streams.

The walls are vertical, and on the right side about 350 feet high, the other being a very little lower. The distance through is about 300 yards.

No. 86. VIEW WEST FROM ABOVE DEVIL'S GATE, showing the valley of the Sweetwater, with the Granite Ridges on the right, and on the left the level lake-like valley stretching away to the Seminole Mountains in the distance.

No. 87. THE TWIN PEAKS, with camp in middle distance.

No. 88. THE TWIN PEAKS, near view.

Another conspicuous landmark, fifteen miles above the Devil's Gate, a high peak in the ridge, cleft down the center, dividing it in two nearly to the base.

These views show admirably the lines of fracture or stratification, and their weathering away into cube-like forms. The fissures sometimes are worn away into a width of several feet, and by this means huge masses are detached and left balanced upon the summits of the ridges.

Nos. 89, 90. A continuation of the same ridges, the last showing how the level sage-covered valley of the Sweetwater juts up squarely to them, impressing the mind with the idea of a great sea or lake.

No. 91. MUMMY ROCK, at the Three Crossings of the Sweetwater, a noted station and stopping-place in the days of wagon-trains. These are the last of the granite ridges, and among them we find some very characteristic studies. This rock, which has been carved out of the masses of granite about it by the slow hand of time, readily suggests the name we have given it. It is about 20 feet in height, stands upon a very narrow base, with its sides sloping outward, and upon its shoulders is balanced another rock, forming the head of the mummy.

Nos. 92–96. STUDIES ALONG THE SUMMIT OF THE GRANITE RIDGE, showing the characteristic lines of fracture and exfoliation.

No. 97. THE OLD DESERTED RANCH and station at the Three Crossings of the Sweetwater. In the center of the view are the remains of a watch-tower or lookout, from which the occupants could discern at a distance the approach of trains, or keep a watch upon their unwelcome visitors, the wandering Sioux.

No. 98. THE EMIGRANT'S GRAVE. Scattered along the dreary 1,200 miles from the crossing of the Missouri to the promised land of the Mormon are little mounds of earth covered with slabs of rock, and sometimes with a plain piece of board at the head, with a simple inscription, and occasionally, when near some ranch, surrounded by a fence.

No. 99. ATLANTIC CITY, SOUTH PASS.

No. 100. SOUTH PASS CITY. South Pass is a gradual elevation, gently rolling and table-like, and one can pass the line of separation between the waters of the two oceans without observing it. In 1867 gold was discovered in richly-paying quantities, and caused a great "stampede" or flocking together of all the wandering miners from over the whole country. Under this influx of population these two "cities" sprang up and were for a time lively, bustling towns. The gold is found both in quartz and placers, and is still mined with good profit. South Pass City has an elevation above the sea of 7,857 feet, and Atlantic City 7,665.

No. 101. BEAVER DAM GULCH. A stream flowing into the main creek at Atlantic City, the bed of which is completely monopolized by colonies of beavers, which have built a continuous series of dams, from bank to bank, for a distance of three or four miles.

No. 102. THE WIND RIVER MOUNTAINS, and Férmont's Peak, from the summit of the Foot-Hill range, north of South Pass, at an elevation of 10,000 feet above the sea. Far above in the distance rise the snow-capped ridges of the axis of the range with Frémont's and Snow Peaks in view. Frémont gives the elevation of Snow Peak as 13,570 feet, and it is the highest in this range. A characteristic feature of these mountains is the dense growth of a species of the nut-pine, which furnishes food for innumerable birds and squirrels, and supplies the Indians with their favorite food.

Nos. 103–106. SHOSHONE INDIANS, (see Indian catalogue.)

No. 107. Camps of the 10th and 11th of September, near Church Buttes.

No. 108. CHURCH BUTTES, on the line of the old overland stage-route, about 150 miles east from Salt Lake, and at this point having an elevation of 6,731 feet. This formation is known as the Mauvaises Terres, or Bad Lands, and consists of a vast deposit of soft sedimentary sandstones and marly clays in perfectly horizontal strata, containing within their beds some very remarkable paleontological remains. The slow process of weathering has carved the bluff-lines into the most curious and fantastic forms, lofty domes and pinnacles and fluted columns, this portion particularly resembling some cathedral of the olden time standing in the midst of desolation.

Distance lends a most delusive enchantment to the scene, and the imagination can build many castles from out of this mass of most singular formation. A nearer approach dispels some of the illusions, but the mind is no less impressed with the infinite variety of detail and the scattered remains of the extinct life of some far-distant age. This is also the land of the "moss-agate." They are found scattered all over the surface of the country.

Nos. 109, 110. A VIEW FROM THE SUMMIT of one of the highest points among the Bad Lands. As far as the eye can reach, upon every side, is a vast extent of most infinite detail. "It looks like some ruined city of the gods, blasted, bare, desolate, but grand beyond a mortal's telling."

Nos. 111–114. DETAILED VIEWS of the same region; and we can see in them the very process by which they have been carved into such curious and beautiful forms.

No. 115. A SAW-MILL IN THE UINTAH MOUNTAINS. The foot-hills of the main range are densely clothed with most excellent pines. Judge Carter, of Fort Bridger, has several steam saw-mills located in the thickest groves, and is producing large quantities of lumber.

No. 116. CAMP OF THE SURVEY, on the 16th of September, among the pines of the foot-hills, in the Uintah Mountains, at an elevation of nearly 10,000 feet above the sea.

No. 117–119. THE UINTAH MOUNTAINS. Views from Photograph Ridge, elevation 10,829 feet. One of the grandest and most perfect mountain views in the West. The foreground is a picturesque group of the mountain-pines. In the middle distance, glim-

mering in the sunlight like a silver thread, is Black's Fork, meandering through grassy, lawn-like parks, the eye following it up to its sources among the everlasting snows of the summit-ridge. The peaks or cones in the distance are most distinctly stratified and apparently horizontal, or nearly so, with their summits far above the limits of perpetual snow, and from 1,500 to 2,000 feet above the springs that give rise to the streams below.

Nos. 120–121. Vast piles of purplish compact quartzite, resembling Egyptian pyramids on a gigantic scale, without a trace of soil, vegetation, or water. One of these remarkable structures stands out isolated from the rest, in the middle of the valley of Smith's Fork, which was estimated to rise 1,500 feet above its base, and so much like a Gothic church did it appear that the members of the survey gave it the name of Hayden's Cathedral. No. 120 is a near and No. 121 a distant view, and they both show with remarkable clearness their horizontal stratification. They are as regular as the steps of a pyramid, and as the snow rests upon each step, it relieves them in the strongest manner.

No. 122. A VIEW NEAR THE HEAD OF THE WEST BRANCH OF BLACK FORK, looking south, and—

No. 123. FROM THE SAME POINT LOOKING WEST, deep down into the valleys, with their silvery streams finding their way down from the lofty, cone-like, snow-capped summits. These two views were made just upon the upper limit of arborescent vegetation; showing in the foreground how the thrifty pines of the plains below, up here, have a hard struggle for existence, being dwarfed down to low, trailing shrubs, spread out along the ground, and always toward the east, indicating that the winds upon these mountains are mostly from the west.

Nos. 124–126. THE UINTAH MOUNTAINS. A distant view from the foothills bordering Bear River.

No. 127. CARTER'S LAKE, Uintah Mountains. A beautiful sheet of water; inclosed on one side by a semicircular wall of sandstones and slates, and on the other by a dense growth of spruce-trees. The depression for the accumulation of the waters of this lake was formed by an immense mass of rock sliding down from the ridges above. The side of the mass opposite the ridge, from which it was detached, would be the highest, forming a rim for the depression. Springs of water ooze out from the sides of the ridge, snows melt, and soon a little lake is formed. This one is 350 yards in length and 80 yards wide; elevation, 10,321 feet. There are very many such all through the mountains, forming a characteristic feature in its scenery.

No. 128. GILBERT'S PEAK. A beautiful and instructive view of one of the highest peaks in the Uintah range, named in honor of General Gilbert, of the Regular Army. The very plainly-marked strata of red sandstones and quartzites incline very slightly to the southeast. The lake in the foreground, of about fifty acres extent, has an elevation of 11,000 feet, and the peak rises abruptly from it 2,250 feet.

No. 129. EL CAPITAN, in miniature. A perpendicular limestone bluff, about 500 feet in height, where Henry's Fork breaks out from the mountains into the broad, grassy valleys of the foot-hills.

No. 130. A CAMP ON HENRY'S FORK, among the big cottonwoods that line all these streams.

No. 131. A CAMP ON HENRY'S FORK, having as a background a portion of the Hog Backs, which rise ridge by ridge to the distant summits of the quartzite nucleus of the Uintahs. (See also 136, where they are shown on a more extended scale.)

Nos. 132, 133. BEAVER DAMS on Henry's Fork. This stream was at one time thickly inhabited by beavers, but they have been nearly driven out by the advance of civilization. There are many left, however, in some of the quiet, secluded nooks, and in such a place we found the subject which affords us so excellent an illustration of their habits. They have here constructed a dam across the channel of the fork, about fifty yards in length and from three to five feet in height.

No. 134. SHOWS HOW THEY CUT DOWN TREES, trim them out, and cut them into convenient lengths suitable for their purpose. The tree at the left is eighteen inches in diameter. The amount of work they do, and the mechanical ingenuity they show in its accomplishment, would hardly obtain credence were it not for the incontrovertible evidence here before our eyes.

No. 135. QUAKING-ASP GROVE. A beautiful tree scattered all over the higher foot-hills, generally in groves of considerable extent. They form a very pleasant relief to the monotony of the pine-forest growth.

No. 136. HOG BACKS on Henry's Fork, near its junction with Green River. (See No. 131.)

No. 137. A NATURAL CAVE near Green River, in an upheaved ridge of limestone. It is full of holes and crevices, that give shelter to multitudes of bats and animals. This cave has also been a favorite resort for Indians, as is shown by traces of fires, the walls of stone laid up for defense, and the chipped flints and arrow-heads scattered about.

No. 138. A PERPENDICULAR BLUFF of curiously weathered sandstone opposite the cave.

Nos. 139, 140. THE FLAMING GORGE, a view on Green River, at the mouth of Henry's Fork, of great beauty, and which derives its principal charm from the vivid coloring. The waters of the river are of the purest emerald, with banks and sand-bars of glistening white. The perpendicular bluff to the left is nearly 1,500 feet above the level of the river, and of a bright red and yellow. When illumined by full sunlight, it readily suggests the title given it. It is the entrance or gateway to the still greater wonders and grandeurs of the famous Red Cañon, that cuts its way to a depth of 3,000 feet between this point and its entrance into Brown's Hole.

No. 141. GREEN RIVER AT BROWN'S HOLE, below the Red Cañon, calm, quiet, and peaceful, recuperating for the still more turbulent passage of the deeper, gloomier, and longer cañons below.

The sandy beach at the left shows the foot-prints of numerous deer, bears, and elk that frequent these banks.

No. 142. A BLUFF OF QUARTZITE, near the mouth of Red Creek, in Brown's Hole.

No. 143. SCENE NEAR THE HEAD OF RED CREEK, showing a fine exposure of the Tertiary beds.

No. 144. A VIEW OF THE COAL-BEARING BLUFFS near Point of Rocks, on Bitter Creek, Union Pacific Railroad, 805 miles west of Omaha, and 6,484 feet above the sea. The veins are about five feet thick, cropping out high on the bluff, and with a very slight inclination to the northwest.

No. 145. CAMP ON THE NORTH FORK OF THE PLATTE.

No. 146. BLUFFS ON THE NORTH FORK OF THE PLATTE, near the crossing of the old overland stage-road. They are eighty to one hundred feet in height, extending along the east bank of the river, and composed of a grayish-brown sandstone, exhibiting in a remarkable manner the various signs of shallow water depositions, ripple, rain, and mud markings. Broad, flat masses of rock lie at the base of the bluff, fifteen or twenty feet square, with the surface covered with these peculiar markings.

No. 147. A VIEW OF THE MEDICINE BOW RIVER, on the line of the old stage-road. Elk Mountain shows dimly in the background, through a snow-storm, which was prevailing at the time our view was taken.

Elk Mountain is the northern spur and highest peak in the Medicine Bow range. Elevation, 7,152 feet above the sea.

No. 148. CAMP ON ROCK CREEK, showing a glimpse of Rock Creek Cañon and the snow-clad spurs of the Medicine Bow Mountains.

No. 149. CAMP FAREWELL, at Fort Sanders, so named as being the last regular camp of the survey of 1870. Showing merely a few of the members, the tents, and animals of the expedition.

No. 150. THE ROBBERS' ROOST, at Virginia Dale, a stage-station on the line of the old overland route, and which attained an unenviable notoriety during 1860 and 1863, while kept by Jack Slade, a noted desperado of that time.

No. 151. PLATTE CAÑON. A view from the plains, looking up into the cañon, being the exit of the South Platte from the mountain range that separates South Park from the plains. A rugged, precipitous, and inaccessible gorge.

No. 152. ROCKS BELOW PLATTE CAÑON. A remarkably expressive view of the upheaved red sandstone, worn by atmospheric agencies into most wonderful forms, the strata standing up at an angle of 60 degrees, and weathered out into a thousand curious pinnacles and serrated ridges.

No. 153. PLEASANT PARK, a small picturesque valley, lying between the sandstone ridges and the mountains, near the Colorado divide.

No. 154. SODA SPRINGS, on the Fountain qui Bouille, three miles above Colorado City. At the present time (1875) the springs have become a fashionable watering-place, and the encroachments of civilization have nearly obliterated the old natural features of locality.

No. 155. UTE FALLS, in Ute Pass, where the Fountain qui Bouille is forced through a narrow, precipitous gorge, about one mile above the springs. Now, these falls are scarcely distinguishable, as a road has been blasted through the massive granite that forms the walls of the cañon, and the accumulation of *debris* falling into the stream, and changed its character entirely.

No. 156. PIKE'S PEAK, from near Colorado City, looking up the valley of the Fountain qui Bouille. Elevation of the peak, 14,216 feet.

No. 157. A VIEW IN THE GARDEN OF THE GODS, showing the central line of the upheaved sandstones, with occasional outcroppings of the white gypsum beds. The views of 1873 show this locality to much better advantage.

Nos 158–160. SCENES IN MONUMENT PARK, along Monument Creek, and the small tributaries that flow into it from the west, some of the most singular and unique monument formations to be met with in the whole country, and the three views we have noted give but a faint conception of their beauty. The 1873 series does them more justice. These groups are upon a small tributary of Monument Creek, about nine miles above Colorado City. The stream has cut a little valley through a coarse material with layers of irregular deposition, hardened into a compact sandstone. Then comes a thin layer of ironstone, or impure limonite, with now and then thin seams of marl or clay, but the whole is a quartzite material, and rather coarse. The light-colored sandstones below are weathered into most singular columnar or monument-like forms, with thin layers of rusty sandstone as a cap, protecting the summit.

No. 161. A COLLECTION OF BUFFALO, ELK, DEER, MOUNTAIN-SHEEP, AND WOLF SKULLS AND BONES, heaped up in monument form, being all collected near Fort Sanders, and shows the abundance of game that once abounded on these plains.

STEREOSCOPIC VIEWS.

Views of mountain scenery in Wyoming Territory, including the Black Hills, Wind River, and Uintah Mountains and Green River.

No. 265. ROCKS on the Chugwater.
No. 266. COTTONWOODS on the Laramie River.
No. 267. LARAMIE BAD-LANDS.
No. 268. VIEW on Laramie River.
Nos. 269, 270. LARAMIE RIVER AND VALLEY from bluffs.
No. 271. CAMP on the Bitter Cottonwood.
Nos. 272, 273. GRANITE ROCKS, at foot of Laramie Peak.
No. 274. BLACK HILLS near Laramie Peak.
No. 275. LARAMIE PEAK from the foot-hills.
No. 276. LARAMIE PEAK from the head of Bitter Cottonwood.
No. 277. LARAMIE PEAK from the head of plains.
No. 278. CAÑON at base of Laramie Peak.
No. 279. THE STOP FOR LUNCH on the way to the peak.
No. 280. CAMP on the La Bonta.
No. 281. COTTONWOODS on the La Bonta.
No. 282. PYRAMID ROCK, near the La Bonta.
Nos. 283–286. NATURAL BRIDGE, near Fort Fetterman.
Nos. 287–291. BOX ELDER CAÑON, near Fort Fetterman.
Nos. 292, 293. VIEWS from Caspar Mountain.
Nos. 294–296. BAD-LANDS, near old Fort Caspar.
Nos. 297, 298. CAMP on the North Platte, near Caspar.
No. 299. NORTH PLATTE RIVER at Red Buttes.
Nos. 300, 301. RED BUTTES at North Platte River.
No. 302. JACKSON CAÑON, near Red Buttes.

No. 303. MEMBERS OF THE SURVEY IN CAMP at Red Buttes.
Nos. 304, 306. INDEPENDENCE ROCK, on the Sweetwater.
No. 307. EAST from Independence Rock.
Nos. 308–311. DEVIL'S GATE, Sweetwater River.
No. 312. CAMP at the Three Crossings of the Sweetwater.
No. 313. OLD RANCH at the Three Crossings of the Sweetwater.
No. 314. SOUTH PASS CITY.
No. 315. ATLANTIC CITY, South Pass.
No. 316. FRÉMONT'S PEAK, distant view in the Wind River Mountains.
No. 317. WEST from southern foot-hills of Wind River Mountains.
No. 318. EAST from southern foot-hills of Wind River Mountains.
No. 319. NORTH from southern foot-hills of Wind River Mountains.
No. 320. SHOSHONE VILLAGE in the Wind River Mountains.
No. 321. WAR-CHIEF'S TENT.
Nos. 322, 323. SCENES in village.
No. 324. WASHAKIE and his warriors.
No. 325. CHURCH BUTTES on Black's Fork.
Nos. 327–328. BAD-LANDS near Church Buttes.
No. 329. CAMP in the Uintah Mountains.
Nos. 330–332. UINTAH MOUNTAINS, head of Black's Fork.
Nos. 333, 334. UINTAH MOUNTAINS, head of Smith's Fork.
No. 335. UINTAH MOUNTAINS, head of Bear River.
No. 336. THE OLD MONK, Uintah Mountains.
No. 337. CARTER'S LAKE, Uintah Mountains.
Nos. 338, 339. GILBERT'S PEAK, Uintah Mountains.
No. 340. BLUFF on Henry's Fork.
No. 341. CAMP ELLIOTT, Uintah Mountains.
No. 342. SPRUCE TREES, Uintah Mountains.
No. 343. PINE-TREES, Uintah Mountains.
No. 344. QUAKING-ASP, Uintah Mountains.
Nos. 345, 346. BEAVER-DAMS on Henry's Fork.
No. 347. BEAVERS' WORK in cutting down trees.
No. 348. CAMP near mouth of Henry's Fork.
No. 349. GREEN RIVER, near mouth of Henry's Fork.
No. 350. NATURAL CAVE, mouth of Henry's Fork.
No. 351. GREEN RIVER, in Brown's Hole.
No. 352. SCENE on Red Creek, near Brown's Hole.
No. 353. BLUFF near mouth of Henry's Fork.
No. 354. VIEW on Medicine Bow River.
No. 355. VIEW on Rock Creek.
No. 356. VIRGINIA DALE, Robber's Roost.
No. 357. MOUTH of Platte Cañon.
No. 358. ROCKS near Platte Cañon.
No. 359. CAMP at Kountz.
No. 360. PLEASANT PARK.
Nos. 361, 362. SODA SPINGS, near Colorado City.
No. 363. UTE FALLS.
No. 364. PIKE'S PEAK.
No. 365. VIEW in the Garden of the Gods.
Nos. 366–371. VIEWS in Monument Park, curiously eroded sandstone.
Nos. 372–374. BUFFALO BONES.
No. 375. ANTELOPE.
No. 376. BEAVER.
No. 377. PORCUPINE.

1871 SERIES.

(Negatives 8 x 10.)

From Ogden, Utah, via Fort Hall, Idaho, to Fort Ellis, Mont., then up the Yellowstone River to the lake, to the geyser basins on the headwaters of the Madison. The return route includes views along the Beaver Head River and that portion of Idaho and Wyoming lying between Fort Hall and Evanston, on the Union Pacific Railroad.

The numbers are continued from the previous series:

No. 165. RENDEZVOUS CAMP, at Fort D. A. Russell, near Cheyenne. [See 47.]

Nos. 166, 167. FIRST CAMP OF THE SURVEY at Ogden, Utah, close under the Wasatch Mountains. A marked feature in the mountain, included in our view, is an exposure of one thousand feet or so of quartzites and limestone, bent up into an arch, the rocky sides of the mountain being so denuded as to show the stratification very distinctly. Elevation of camp plateau 4,488 feet.

No 168. OGDEN CAÑON three miles above its mouth. A narrow gorge cut through the rocks, with walls 1,500 to 2,000 feet in height, the roadway being built up from the bed of the creek. In the center of the view, a cone-like mass of quartzites, most distinctly and beautifully stratified, stands up at an angle of 55 degrees and 100 feet high. A very interesting geological picture.

Nos. 169, 170. CAMP NEAR THE HEAD OF CACHE VALLEY, Utah, looking south, seventy-five miles north of Ogden. The valley is about sixty miles in length and seven in width. Is well settled with six or eight Mormon villages, and a total population of some 10,000. Elevation, 4,624 feet.

No. 171. BEAR RIVER CROSSING, head of Cache Valley, eighty miles from Ogden.

No. 172. CAMP ON GOOSEBERRY CREEK, north slope of Red Rock Pass, with a view of one of the mountain ridges that separate Cache from Malade Valley. Elevation, 4,706 feet.

No. 173. RED ROCK PASS, Idaho. Elevation, 5,041 feet. One hundred miles from Ogden; the divide between the waters of the Columbia and Salt Lake. The butte on the left is a bright-red, ferruginous sandstone, and the other a bluish limestone.

No. 174. RED ROCK BUTTE, one mile below the pass, 300 feet in height of Carboniferous limestone, a rich red color, due to the presence of oxide of iron.

Nos. 175, 176. PORTNEUF CAÑON. Illustrating the immense basaltic overflow, filling the valley as level as a floor, contrasting finely with the bold mountain outlines upon either side. The creek cuts closely up to the beds, exposing an upright wall of columnar basalt for a number of miles.

No. 177. FORT HALL, Idaho, north from Ogden one hundred and seventy-six miles. Elevation, 4,724 feet. Located in a beautiful grassy valley, among the foot-hills, on the south side of Snake River. It is forty miles above the site of old Fort Hall, located on the banks of the river.

No. 178. SNAKE RIVER. Looking up from Taylor's bridge, twenty-six miles west from Fort Hall. The river here rushes through a narrow channel of dark, nearly black basalt. Our view was taken in the spring, when the channel was full. In the fall, when the river is low, it reveals deep cañon-like walls about 100 feet below the surface.

No. 179. POT-HOLES. A portion of an old channel of the river through the basalts, and showing how curiously the pot-holes were hollowed out of the iron like rock by the action of the water. They exist by thousands on both sides and up and down the river, and are particularly noticeable in this old channel.

No. 180. PLEASANT VALLEY, Idaho. A small valley, of not more than 200 acres in extent, just south of the main Rocky Mountain divide. It is 275 miles north from Ogden; elevation, 6,236 feet. The divide is four miles to the north, and is but 250 feet higher.

Nos. 181, 182, 183. RED ROCK MOUNTAINS, from the junction on the overland stage-line, 293 miles from Ogden; elevation of valley, 6,329 feet. They are a portion of the main Rocky Mountain divide, separating Idaho from Montana.

No. 184. MOUNT GARFIELD. The highest summit in the Red Rock Mountains, being 9,704 feet above the sea.

No. 185. A VIEW IN THE DEVIL'S PASSWAY, showing a portion of the cañon through quartzites and sandstone, with a basalt coping.

No. 186. CAMP ON THE PASSAMIRE, or Stinking Water, one of the main branches of the Jefferson, showing a glimpse of the snow-clad mountains bordering the Madison, and among which are its sources.

No. 187. VIRGINIA CITY, Mont. Elevation, 5,824 feet, near the foot of Alder Gulch, one of the richest placer-mining districts in Montana, discovered in 1863. The town dates its existence from that time. The view is from across the gulch, looking north.

Nos. 188, 189, 190. HYDRAULIC MINING NEAR VIRGINIA CITY. Alder Gulch is sixteen miles in length, rising in the mountains near Madison River at an altitude of 7,500 feet. The two first views show the manner of washing away the sides of the gulch into the sluice-boxes, where the gold is collected. In No. 190 a flume is laid upon the bed-rock, in the bottom of the gulch, and the waters of the creek brought through it, carrying with its current the auriferous sands.

No. 191. BRIDGE OVER THE MADISON, about half-way between Virginia City and Bozeman. The Madison is one of the three streams that unite a short distance below to form the Missouri.

No. 192. FORT ELLIS, Mont. One of the largest and most important military posts in the Northwest, situated on Mill Creek, about three miles above Bozeman, at the head of Gallatin Valley. It is the rendezvous and outfitting point for the exploration of the "Wonder Land" lying beyond.

No. 193. A GROUP OF THE OFFICERS AT FORT ELLIS, July, 1871.

Nos. 194, 195. CAMPS OF THE SURVEY, near Fort Ellis, preparatory to moving over on the Yellowstone.

No. 196. MYSTIC LAKE. A picturesque little sheet of water of about fifty acres extent, the head of Bozeman Creek, and one of the branches of the East Gallatin. It is about twelve miles south of Fort Ellis, up among the mountains. As it is full of excellent trout, it is a favorite pleasure resort.

No. 197. MYSTIC LAKE, distant view from the trail. The first glimpse as we approach it.

Nos. 198, 199. VIEW DOWN THE CREEK a short distance below the lake. The creek falls very rapidly, some 500 feet in less than half a mile.

Nos. 200, 201. VALLEY OF THE YELLOWSTONE, looking south from the first cañon. On the left the Yellowstone or Snowy range stands out in bold relief, the eye following it up to Emigrant Peak, thirty miles away. The river winds among groves of cottonwood through a broad lake-like valley, of from three to five miles in width, until it fades away in the distance, forming one of the most attractive views in the catalogue.

No. 202. EXIT OF THE YELLOWSTONE, through the first cañon, showing a portion of the mountain range included in the last view.

No. 203. BOTELER'S RANCH, on the Yellowstone, opposite Emigrant Peak. A log cabin of the pioneer stamp, owned by three brothers, who have earned a wide reputation for whole-souled, hearty hospitality. Here all wagons and extra baggage were left, for beyond this point was nothing but a narrow trail, (1871,) accessible only to the sure-footed mule or hardy Cayuse.

No. 204. EMIGRANT PEAK. A great volcanic cone on the east bank of the Yellowstone opposite Boteler's, and the southern terminus of the Yellowstone Snowy range; elevation, 10,629 feet, and 5,500 feet above the river at its base. On its northern flank is the well-known Emigrant Gulch mining-district, and the site of what was once Yellowstone City.

No. 205. VALLEY OF THE YELLOWSTONE. Six miles above Boteler's, looking north; great masses of volcanic breccia in the foreground; a basaltic table in the middle distance, and in the extreme distance the sharp crest of Emigrant Peak.

No. 206. THE LOWER OR SECOND CAÑON OF THE YELLOWSTONE, from the lower end looking up. The granite walls rise in abrupt angular lines one thousand feet or more above the turbulent stream forcing its way through the narrow channel at their feet.

No. 207. THE SECOND CAÑON from its upper end looking down.

No. 208. THE SECOND CAÑON at the water's edge. On one side rise abrupt perpendicular walls of gneiss, and on the opposite side, less abrupt, are scattered a few cottonwoods among the mass of rocky *debris* affording pleasant shade for the fisherman, for the river in this neighborhood is most abundantly stocked with the largest and finest of trout.

No. 209. APPROACH TO CINNABAR MOUNTAIN from below, looking up the river from the stand-point in No. 207.

Nos. 210–213, are different views of Cinnabar Mountain and the Devil's Slide, ten miles above the second cañon. It is a mountain of alternate beds of limestone, sandstone, quartzites, and volcanic dikes, elevated to a very nearly vertical position, with the softer strata so worn away as to leave the harder and more enduring ridges standing. Our views include only the central portion of the long series of ridges. Prominent among them are two parallel walls, fifty feet apart and two hundred in height, running up the mountain side 1,500 feet. Between the walls on one side is a band of bright vermilion-tinted clay, which has been mistaken for cinnabar, and hence the name Cinnabar Mountain.

THE GREAT HOT SPRINGS ON GARDINER'S RIVER.

Ten miles above Cinnabar Mountain, and thirty-five from Boteler's, we come to Gardiner's River, a mountain torrent cutting its way through Cretaceous and Tertiary strata, in picturesque cañons, and emptying itself into the Yellowstone at the foot of the third cañon. Four miles above the junction of the streams, and at an elevation of 500 or 600 feet above Gardiner's River, we come suddenly in sight of the springs. Before us lies a high white hill of calcareous sediment, deposited from numerous hot springs. The whole mass looks like some grand cascade that had been suddenly arrested in its descent and frozen. On examination it was found that the deposit extended for some two miles further up the gorge, and below reached to the edge of the river, occupying altogether about four square miles. The principal mass, occupying an area of about one square mile, is arranged in a series of terraces, one above the other, each being composed of beautiful basins, semicircular in shape and having regular edges with exquisitely scalloped margins. Small streams flow down from them in channels lined with oxide of iron, with the most delicate tints of red. Others show exquisite shades of yellow, from a deep, bright sulphur to a delicate cream color. Still others are stained with shades of green. All these colors are as brilliant as the brightest aniline dyes.

The water, after rising from the spring-basins, flows down the declivity step by step, from one reservoir to another, at each one of them losing a portion of its heat until it becomes as cool as spring-water. Holding in solution a great amount of lime, with some soda, alumina, and magnesia, they are slowly deposited as the water flows down the mountain, forming the succession of basins. The temperature varies from 160° Fahr. to 194°, the boiling-point at this elevation.

These natural basins vary somewhat in size, averaging five by eight feet, and from one to four feet in depth. Their margins are beautifully scalloped and adorned with a natural bead-work of exquisite beauty.

Nos. 214, 215. GROUP OF LOWER BASINS.

Nos. 216, 217. GROUP OF UPPER BASINS.

The above series comprise the principal portion of the basins termed fancifully by some Diana's Bathing-Pools.

No. 218. LARGE SPRING UPON SUMMIT, near the outer margin of the main terrace, supplying the above bathing-pools with their water. Its dimensions are twenty-five by forty feet.

Nos. 219–223. GROUP OF SPRINGS upon the same level with the above great boiling spring, of less activity, but greater beauty in form and tint.

No. 224. AN OBLONG FISSURED RIDGE, of about 150 yards in length, six to ten feet high, and from ten to fifteen broad at the base. The fissure runs from one end to the other, and is from six to twelve inches wide, from which steam issues in considerable quantities. The inner portion of the shell is lined with a hard, white enamel like porcelain, covered with beautiful crystals of sulphur that have been gathered from the surging and seething caldron of sulphureted steam rising from it.

No. 225. A GENERAL VIEW of the northern face of the main central portion.

No. 226. CAP OF LIBERTY, distant view.

No. 227. CAP OF LIBERTY, near view.

At the base of the principal terrace is a large area covered with shallow pools, where some of the ornamentations are perfect, while others are fast going to decay, leaving the decomposed sediment as white as snow. On this sub-terrace is a remarkable cone about fifty feet in height, and twenty feet broad at the base, its form suggesting the name of the Liberty Cap. It is undoubtedly the remains of an extinct geyser.

No. 228. LOOKING UP over the extinct portion of the main terrace from the Cap of Liberty.

No. 229. LOOKING DOWN upon Gardiner's River from the summit of the main terrace, the beautiful basins forming the foreground, and rising abruptly from the river to a height of from 1,500 to 2,000 feet, is a vertical bluff of beautifully stratified Cretaceous and Tertiary beds, capped by a basaltic plateau.

No. 230. GENERAL VIEW OF THE MAIN SPRING and terrace from above.

No. 231. GENERAL VIEW OF THE MAIN SPRING from below.

No. 232. THE FIRST BRIDGE EVER BUILT ACROSS THE YELLOWSTONE, near the junction of East River with the Yellowstone, and about fifteen miles above the hot springs. It was built by miners in the summer of 1870, to accommodate the "stampede" that set in toward the Clark's Fork "diggings." The river is here 200 feet wide, and flows with great force and rapidity between perpendicular walls.

No. 233. TOWER FALLS, near view from near base.

No. 234. TOWER FALLS, distant view from above.

Fifty miles above Boteler's we reach the deep, wild, romantic gorge through which flows Tower Creek. It rises high up in the main divide, back of Mount Washburn, and flows for about ten miles through gloomy cañons. About 200 yards above its entrance into the Yellowstone the stream pours over an abrupt descent of 156 feet. The falls are about 260 feet above the level of the Yellowstone at the junction, and are surrounded by columns of volcanic breccia, Nos. 235, 236, and 237, rising from 50 to 100 feet above the falls, and extending down to its foot, like gloomy sentinels or gigantic pillars at the entrance to some grand temple. They form the most conspicuous feature in the scenery, and suggest the name given to creek and falls.

No. 238. COLUMN ROCKS, on the east bank of the Yellowstone, a short distance below the mouth of Tower Creek, forming one side of a deep, narrow cañon. The walls are about 600 feet in height, and have two rows of basaltic columns, each one of which is about twenty-five feet in height and each column five feet in diameter. Between these two layers, which are 208 feet apart, are beds that seem to have a large amount of sulphur in their composition, from their bright yellow color.

THE GREAT FALLS OF THE YELLOWSTONE.

Sixteen miles below Yellowstone Lake, and at the head of the Grand Cañon, are the Falls of the Yellowstone, the Upper

GRAND CAÑON OF THE YELLOWSTONE.

and Lower. The two falls are not more than a quarter of a mile apart. Above, the river flows through a grassy meadow-like valley, with a calm, steady current, until within about half a mile of the Upper Falls, when the rapids commence hurrying the waters on between low but narrow and precipitous walls of massive basalt, when they literally shoot out through a narrow contracted gorge over a precipice 140 feet, and, striking a slanting shelf below, ricochet off into the basin, a mass of snow-white foam. The river then spreads out over a wide, gently-descending bed of rock, with walls from 200 to 400 feet in height, until it reaches the brink of the Lower Falls, when the stream is contracted to a width of 100 feet, and then plunges over the precipice a solid, unbroken mass, falling 397 feet into the spray-filled chasm, enlivened with rainbows, and glittering like a shower of diamonds. The walls of the cañon immediately above the Lower Falls are about 400 feet in height, or a total depth to the bottom of the falls of about 800 feet, and upon each side are perfectly horizontal for nearly the whole height.

No. 239. THE LOWER FALLS. A near view, not far from the bottom of the cañon, and about 800 yards below the falls.

No. 240. THE LOWER FALLS. Distant view from farther down the cañon.

Nos. 241, 242. THE LOWER FALLS. A view from the top of the cañon, west side, one mile below the falls, and showing the cañon for that distance.

No. 243. THE LOWER FALLS. View from the east side of the cañon.

No. 244. UPPER FALLS, from the top of the cañon, just above the Lower Falls.

Nos. 245, 246. UPPER FALLS, near view from the east side of the cañon.

No. 247. UPPER FALLS, near view from the west side.

THE GRAND CAÑON.

Above the falls, the river flowing over hard, compact, iron-like basalt, makes but little impression upon it, but after its leap it has different material to deal with. Instead of unyielding rock there is a vast deposit of soft volcanic ash, with harder seams and dike-like eruptions of breccia and basalt. Ages ago this whole region was the basin of an immense lake. Then it became the center of volcanic activity; vast quantities of lava were emptied, which, cooling in the water, took the form of basalt. Volumes of volcanic ash and rock fragments were thrown out from the craters, from time to time, forming breccia as they sunk through the water and mingled with the deposits from the siliceous springs. Over this were spread the later deposits from the waters of the old lake.

In time the country was slowly elevated, and the lake was drained away. The easily eroded breccia along the river-channel was cut deeper and deeper as ages passed, while springs and creeks and the falling rain combined to carve the sides of the cañon into the fantastic forms they now present, by wearing away the softer rock and leaving the hard basalt and the firmer hot-spring deposits standing in massive columns and gothic pinnacles. The basis material of the old hot-spring deposits in silica, originally white as snow, but now stained by mineral waters with every shade of red and

yellow, from scarlet to rose-color, from bright sulphur to the daintiest tint of green. When the light falls favorably upon these blended tints, the Grand Cañon presents a more enchanting and bewildering variety of forms and colors than human artists ever conceived. The erosion was practically arrested at the upper end of the cañon by a sudden transition from the softer breccia to hard basalt, and the falls were the result.

Nos. 248, 249. GRAND CAÑON, looking down from over the Lower Falls, west side.

Nos. 250, 251. GRAND CAÑON from the east bank.

No. 252. GRAND CAÑON. West side, one mile below the falls, looking down.

No. 253. GRAND CAÑON from the east side, one mile below the falls, looking down.

No. 254. THE WALLS OF THE CAÑON, as seen from below.

Nos. 255, 256. CRYSTAL FALLS. Cascade Creek is a small tributary of the Yellowstone, cutting its way through a deep cañon of volcanic ash and basalt, and just before its union with the Yellowstone flows over a series of ledges, making a cascade as beautiful as its previous course has been weird and ugly. There is first a fall of five feet, and another of fifteen; then it spreads out over the rocks down an abrupt descent of eighty-four feet.

Nos. 257–259. RAPIDS ABOVE THE UPPER FALLS of the Yellowstone. The first view is immediately above the falls, showing the narrow rock-bound channel, the other two a quarter of a mile farther up the stream, and showing the huge, detached masses of basalt that have been left standing in the middle of the river.

No. 260. SULPHUR SPRING. At Crater Hills, ten miles above the falls, on the east side of the Yellowstone, in the center of a most interesting group of hot springs, is a magnificent sulphur spring. The deposits around it are silica and enamel like the finest porcelain. The thin edges of the nearly circular rim extend over the waters of the basin several feet, the open portion being fifteen feet in diameter. The water is in a constant state of agitation, and seems to affect the entire mass, carrying it up impulsively to a height of four or five feet. The decorations about the spring, the beautiful scalloping around the rim, and the inner and outer surface, covered with a sort of pearl-like bead-work, give it great beauty.

No. 261. MUD SPRINGS, at Crater Hills, near the Sulphur Spring. The contents of this spring is a fine, siliceous, pearl-colored mud, of the consistency of thick, hasty-pudding. The surface is covered all over with puffs of mud, which, as they burst, give off a thud-like noise, and then the paint-like liquid recedes from the center of the puffs in the most perfect series of rings to the side. The explosion is produced by the escape of sulphureted hydrogen-gas through the mud.

No. 262. THE GROTTO SPRING. About two miles above the Crater Hills, on the west side of the Yellowstone. A column of steam issuing from a cave on the side of the hill, with an opening of about five feet in diameter, readily locates its position. The roaring of the waters in the cave, and the noise of the waves as they surge up to the mouth of the

CRYSTAL FALLS, CASCADE CREEK

opening, are like that of the billows lashing the sea-shore. The water is as clear as crystal, and the steam from it is so hot that it is only when a breeze wafts it aside for a moment that one can venture to take a look into the opening.

No. 263. CRATER OF THE MUD GEYSER.

No. 264. MUD GEYSER IN ACTION. The only true mud geyser discovered, eight miles below Yellowstone Lake. It has a funnel-shaped orifice in the center of a basin 150 feet in diameter, and in which there are two other hot mud springs.

The flow of the geyser is regularly every six hours. the eruptions lasting about fifteen minutes. The thick, muddy water rises gradually in the crater, commencing to boil when about half way to the surface, and occasionally breaking forth with great violence. When the crater is filled it is expelled from it in a splashing, scattered mass, ten feet in diameter, to forty feet in height. The mud is a dark lead-color, and deposits itself thickly all about the rim of the crater.

No. 265. A MUD SPRING on the opposite side of the river, and of the same nature as No. 261.

No. 266. YELLOWSTONE RIVER where it leaves the lake, looking down from the same stand-point as the following.

Nos. 267, 268. YELLOWSTONE LAKE, looking south from where the river leaves it, and showing the larger portion, or the body of the lake. It is some twenty-two miles long, from north to south, and about ten to fifteen miles in width from east to west, with an elevation of 7,427 feet above tide-water.

In shape it is aptly compared to the human hand; the northern portion would constitute the palm, while the southern arms might represent the fingers. Careful soundings gave the greatest depth at 300 feet. When calm, the waters reflect the sky in the most delicate and beautiful ultramarine hues, but when stormy, and lashed by the strong winds of this high altitude, it resembles in its white-capped breakers and heavy rolling surf some of our larger inland seas. The lake is plentifully stocked with salmon-trout, their numbers being almost incredible, and averaging two pounds in weight.

No. 268. FIRST CAMP OF THE SURVEY, upon the shore of the lake, at the mouth of Bridge Creek, and just opposite Stevenson's Island.

Nos. 269–272. CAMP OF THE SURVEY and of their escort, upon the large southwest arm of the lake.

No. 273. THE ANNA, the first boat ever launched upon the lake. Its frame-work was brought up from Fort Ellis and then put together, and covered with tar-soaked canvas. A tent-fly made the sail. In it two adventurous members of the survey visited every arm and nook of the lake, and made all the soundings. It is so named in compliment to Miss Anna Dawes, a daughter of the distinguished statesman whose generous sympathy and aid have done so much toward securing these results.

No. 274. A VIEW ALONG THE SOUTHWEST ARM OF THE LAKE, looking north from the camp. The shore is covered to a considerable thickness with the disintegrated silica deposited from the flowing hot springs, so that in walking over it, it seems like treading on the broken fragments of washed shells along the sea-shore.

No. 275. A HOT SPRING CONE, entirely surrounded by the clear cold water of the lake. In the center is the spring of boiling water. One may stand on it, extend his rod into the lake, catch the trout, and cook them in the boiling spring, without removing them from the hook. It is six feet in diameter at the water's edge.

No. 276. A GROUP OF HOT-SPRING BASINS in the same vicinity. Their great beauty lies almost wholly in the exquisite color they possess, and of which no pen can convey an adequate idea.

No. 277. MUD PUFFS. A thick boiling and bubbling mass of reddish mud. These mud springs lie all about the camp, (Nos. 268–272,) and their constant thud is heard night and day, as the hot steam struggles up from below, and, exploding, scatters the mud in every direction.

Nos. 278–282. YELLOWSTONE LAKE, a bird's-eye panoramic view, in five sections, taken from the high hills on the east side of the southeast arm, near where the Upper Yellowstone empties into the lake. The first view looks south, and shows the high range that separates the waters of the Yellowstone from those of Wind River. The second view includes the Upper Yellowstone and the bay in which it empties. The third and fourth are looking east and northeasterly across the southern arms of the lake and Promontory Point to the distant mountains on the farther side. No. 5, or the last of the series, is a view south, past Promontory Point, into the large open space of the lake, where it fades away into the horizon.

Nos. 283, 284. MOUNTS DOANE AND STEVENSON. The first 10,118 feet above the sea, and the other but a few feet lower, situated some six or eight miles east of the southeast arm of the lake. They are the fragments of the rim of an immense crater.

Nos. 285, 286, 287. VIEWS LOOKING UP THE SOUTHEAST ARM, with Promontory Point in the center, the waters of the bay extending far away into the distance. In the foreground on the left the basalts are shown, especially in No. 287, where detached masses of breccia extend out into the lake.

No. 288. EARTHQUAKE CAMP, near Steamy Point, east side of Yellowstone Lake, so named from several slight shocks of earthquake which were experienced at this place on the night of the 19th of August, 1871.

No. 289. MARY'S BAY, east shore of Yellowstone Lake, showing one of the numerous beautiful curves (as perfect as if drawn by the hand of art) of the shore-line.

No. 290. STEAMY POINT, east shore of the lake, near its outlet. Numerous steam-vents abound here, which are in operation constantly, sending off steam with a noise like that of the escape-pipe of a steamboat.

No. 291. PELICAN'S ROOST, near Steamy Point. A detached mass of the hot spring deposit, which has been cut off from the mainland by the action of the waves, and left in the lake one hundred feet from the shore.

No. 292. SMALL SOUTHWESTERN ARM OF THE LAKE, at the foot of Flat Mountain.

No. 293. THE HIDDEN LAKE, within a quarter of a mile of Yellowstone Lake, and near the camp in No. 269. It is about a mile in length, entirely hidden among the dense pines, and might easily escape notice.

THE GIANT GEYSER.

THE UPPER GEYSER BASIN.

On Fire Hole River, a tributary of, and sometimes called, the Madison, are the principal of the famed spouting geysers. Our time being very limited indeed, we have only a few views of the craters of the most noted geysers. For a more extended list, see 1872 series.

No. 294. CRATER OF THE CASTLE GEYSER. Bearing a strong resemblance to an old castle, but of the purest white marble. This view, taken from the side opposite the river, shows the main portion to be composed of very thin laminæ of silica.

No. 295. CRATER OF CASTLE GEYSER. A view from the river side. Here we see the peculiar crystallization of the silica in large globular masses, like spongiform corals, and running off into the usual exquisite bead-work to the laminated base. The entire mound is about forty feet in height. On the right, close to its base, is a small but very active and turbulent little geyser, probably an offshoot from the greater one. In the center of the view, and the most striking object in it, is the beautiful hot spring, with elegantly-carved border and water of the clearest turquois blue. It is nearly circular, about twenty-five feet in diameter, and funnel-shaped, passing down to a depth of sixty feet in the center. The water is of almost unnatural clearness, and the varying depth gives a most beautiful gradation of color. It has a constant temperature of 172 degrees.

No. 296. CRATER OF THE GIANT, located about a quarter of a mile below the Castle. It is about ten feet in diameter at its base and twelve in height, with an orifice of about three feet in diameter. It projects a column of water to a height of from 125 to 150 feet, the eruptions lasting about two hours.

No. 297. CRATER OF THE GROTTO, a few rods below the Giant, and ensconced in a grove of trees. It differs externally from all the other craters, but, like them, consists of a mass of siliceous sinter, twelve feet in diameter and five feet high, full of large sinuous orifices, from which the water is projected during an eruption.

No. 298. THE GROTTO IN ERUPTION, throwing an immense body of water, but not more than forty feet in height. The great amount of steam given off almost entirely conceals the jets of water.

No. 299. CAMP UPON THE SUMMIT OF THE DIVIDE, between the head of the East Fork and the main Yellowstone, by the side of a little lake, 8,500 feet above the sea.

No. 300. ANOTHER VIEW of the same lake.

No. 301. THE ODOMETER, made by attaching a pair of shafts to the fore wheels of an ambulance, to the spokes of which were attached the instruments that recorded their revolutions, and measured the surface of the country over which we passed. These were the first wheels that were ever taken into this little-known region.

No. 302. OUR HUNTERS, José and Joe Clark, returning from a successful hunt, with pack-animal laden with elk-meat.

No. 303. THE UNITED STATES GEOLOGICAL SURVEY, with pack-train, *en route* upon the trail between the Yellowstone and the East Fork, showing the manner in which all parties traverse these wilds.

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No. 300. ANOTHER VIEW of the same lake.

No. 301. THE ODOMETER, made by attaching a pair of shafts to the fore wheels of an ambulance, to the spokes of which were attached the instruments that recorded their revolutions, and measured the surface of the country over which we passed. These were the first wheels that were ever taken into this little-known region.

No. 302. OUR HUNTERS, José and Joe Clark, returning from a successful hunt, with pack-animal laden with elk-meat.

No. 303. THE UNITED STATES GEOLOGICAL SURVEY, with pack-train, *en route* upon the trail between the Yellowstone and the East Fork, showing the manner in which all parties traverse these wilds.

No. 304. AN ELK, *Cervus Canadensis*. Very abundant about the lake. The one shown in the view is two years old, with horns still in the velvet.

Nos. 305, 306, 307. THE CONE OF AN EXTINCT HOT SPRING OR GEYSER upon the East Fork of the Yellowstone. A very curious mammiform mound, of about forty feet in height, built up by overlapping layers like the Cap of Liberty, on Gardiner's River. The material is principally calcareous. No water issues from the cone at the present time, and none of the springs in the immediate vicinity are above the ordinary temperature of brook-water.

No. 308. POINT OF ROCKS, on the Beaver Head River, on the line of the Ogden and Helena overland-stage road. The rocks are a carboniferous limestone, with a dip of twenty-three degrees to the southeast. The Beaver Head cuts a narrow channel through it, forming a small cañon.

No. 309. BEAVER HEAD ROCKS, at the mouth of the cañon of the same name, looking down the cañon from above. The river forces itself through a narrow gateway, with vertical walls of dark purplish basalt. The rocks on either side present the forms of animals couchant, which, in the imagination of the Indians, bear a resemblance to the beaver; hence the name, which is applied to the river as well as the cañon.

No. 310. A HIGH BLUFF OF LIMESTONE, upon the west bank of the river.

No. 311. AN OUTBURST OF IGNEOUS MATERIAL, about five miles above the entrance to the cañon. It has assumed the nearly columnar form of basalt, and is weathered into sharp pinnacles.

No. 312. CAMP AT FORT HALL. (See No. 177.)

No. 313. CAMP, twenty-five miles south of Fort Hall, at Three Springs.

No. 314. SODA SPRINGS ON BEAR RIVER. At the Big Bend of Bear River are located the most interesting group of soda springs known on the continent, occupying an area of about six square miles. They are now few in number, and simply the remnants of former greatness. On the opposite side of the river in the above view are the steam-vents, to which Frémont gave the name of Steamboat Springs, from the noise they make like a low-pressure engine. Near by is a spring, with an orifice brightly stained with a brilliant yellow coating of oxide of iron, from which the water is thrown up two feet by a succession of impulses.

No. 315. HOOPER'S SPRING, of the same nature as the others in the vicinity, but with a more copious escape of carbonic-acid gas, and is a favorite with those seeking these health-giving waters.

Nos. 316, 317. EXTINCT SODA SPRING BASIN. About three miles up the valley of a small tributary of the Bear River we come to a most remarkable formation, consisting of the basins of old springs long extinct. They are called the "petrifying springs" by the settlers, from the abundance of calcareous tufa which exists in the basins. Some of them are six feet in depth, and contain large masses of plants coated with a calcareous material, which retains perfectly the form of the leaf and stem.

Nos. 318, 319, 320. BEAR LAKE, about half-way between Soda Springs and Evanston, ten miles in length, and from five to eight in breadth. The boundary-line between Idaho and Utah passes

SHADOW LAKE, NEAR THE HEADWATERS OF THE YELLOWSTONE.

directly across the lake from east to west. It is a beautiful lake, set like an emerald among the mountains, and not even the Yellowstone presents such exquisite coloring. The elevation is 5,911 feet.

Nos. 321, 322. EVANSTON COAL-MINES, about a mile from the town of the same name, on the Union Pacific Railroad. These beds are the largest and most extensively worked in the West. The vein is from twenty-two to twenty-three feet in thickness, cropping out from the side of the mountains, with a dip of ten degrees north of east.

Nos. 323 to 364. PORTRAITS AND VIEWS of the habitations of the Indians, a description of which will be found in another portion of this catalogue.

STEREOSCOPIC VIEWS.

No. 380. OGDEN CAÑON.
No. 381. OGDEN CAÑON, near mouth.
No. 382. OGDEN CAÑON, near mouth.
No. 383. OGDEN CAÑON, near mouth.
No. 384. CAMP ON WARM CREEK, head of Cache Valley.
No. 385. PORTNEUF CAÑON.
No. 386. SNAKE RIVER BRIDGE.
No. 387. SNAKE RIVER BRIDGE.
No. 388. SNAKE RIVER BRIDGE.
No. 389. POT-HOLES IN BASALTIC ROCKS.
Nos. 390–394. WILD-CAT CAÑON, Mont.
Nos. 395–397. DEVIL'S PASSWAY, Mont.
No. 398. CAMP ON THE STINKING WATER.
Nos. 399–401. HYDRAULIC MINING, near Virginia City, Mont.
No. 402. CHINAMEN SLUICING.
No. 403. "PANNING OUT."
No. 404. "CRADLING."
No. 405. MADISON BRIDGE.
Nos. 410–413. CAÑON SOUTH OF MYSTIC LAKE.
No. 414. THE MISSION, or Crow agency.
No. 415. CAMP OF NEZ PERCÉ INDIANS.
Nos. 416–418. LODGES OF NEZ PERCÉ INDIANS.
No. 419. YELLOWSTONE VALLEY, six miles above Boteler's.
Nos. 420–422. VIEWS IN THE LOWER CAÑON.
No. 423. A SUCCESSFUL FISHERMAN.
Nos. 424–429. DEVIL'S SLIDE, on Cinnabar Mountain.
Nos. 430, 431. LOWER BASINS, Soda Springs, Gardiner's River.
Nos. 432–434. UPPER BASINS.
No. 435. GENERAL VIEW of Upper Basins, on Gardiner's River.
No. 436. CAMP OF LIBERTY, on Gardiner's River.
No. 437. LOWER FALLS, on Gardiner's River.
No. 438. COLUMN ROCKS.
Nos. 439, 440. THE LOWER FALLS OF THE YELLOWSTONE.
No. 441. THE LOWER FALLS OF THE YELLOWSTONE, east side.
No. 442. THE UPPER FALLS OF THE YELLOWSTONE.
No. 443. THE UPPER FALLS OF THE YELLOWSTONE, distant view.
No. 444. THE UPPER FALLS OF THE YELLOWSTONE, near view.
Nos. 445–447. GRAND CAÑON OF THE YELLOWSTONE.
Nos. 448–450. GRAND CAÑON OF THE YELLOWSTONE, from east side.
No. 451. CRYSTAL FALLS, Cascade Creek.

Nos. 452–454. RAPIDS ABOVE THE UPPER FALLS.
No. 455. MARY'S BAY, Yellowstone Lake.
No. 456. SAIL-BOAT ANNA, on the Lake.
No. 457. SOUTHEAST ARM OF LAKE.
Nos. 458, 459. CASTLE GEYSER, Fire Hole River.
No. 460. GIANT GEYSER, Fire Hole River.
No. 461. GROTTO GEYSER, Fire Hole River.
No. 462. THE ODOMETER.
No. 463. OUR HUNTERS.
No. 464. CAMP BY LAKE IN THE WOODS.
Nos. 465, 466. EXTINCT GEYSER, East Fork.
No. 467. AN ELK.
No. 468. BEAVER HEAD ROCK.
No. 469. BEAVER HEAD CAÑON.
Nos. 470, 471. PAWNEE AGENCY, Nebr.
No. 472. PAWNEE SCHOOL-HOUSE, Nebr.
No. 473. OMAHA INDIAN AGENCY.
No. 474. OMAHA INDIAN VILLAGE.
Nos. 475–477. OMAHA INDIAN CHILDREN.
No. 478. STANDING HAWK AND SQUAW.
No. 479. BLACKBIRD HILL, OMAHA RESERVE.
Nos. 480, 481. HELENA, Mont.
Nos. 482, 483. BIRD-TAIL ROCK, Mont.
Nos. 484, 485. UNION MILLS, Mont.
Nos. 486, 487. MINING-FLUME, in Montana.

1872 SERIES.

Before the whole party had gathered together in the rendezvous camp at Ogden, Utah, two side trips for views were made by the photographers—one along the foot-hills of Colorado, as far south as Pike's Peak, and the other to Cottonwood Cañon, south of Salt Lake City. Starting from Ogden the 24th of June, we have views of the route through Malade Valley, and Portneuf Cañon to Fort Hall, Idaho. The Great Teton Range, near the head of Snake River, was reached in the latter part of July, and worked up in detail during a lay-over of ten days.

The geyser basins on the head of the Madison were reached via Henry's Lake and Tyghee Pass, and the result of a week's sojourn is a large series of exceedingly interesting views of that remarkable region. The falls, cañon, and mammoth hot springs of the Yellowstone were then re-visited for the purpose of extending and perfecting our series. The grand and beautiful scenery of the Gallatin Mountains and the West Gallatin River were next worked up, presenting to the world for the first time some of the finest and most picturesque views in the Rocky Mountains.

The work of this season includes forty-five 11 by 14 views, the very first plates of this size ever made in the Rocky Mountains, one hundred and sixty 8 by 10, and one hundred and forty-five stereoscopic.

With but very few exceptions the following, as also the preceding views, are the first ever made of the different subjects:

(Negatives 11 × 14.)

No. 1. CAMP OF THE UNITED STATES GEOLOGICAL SURVEY, at Ogden, Utah. (See No. 166.)

No. 2. GROUP OF THE MEMBERS OF THE SURVEY at the camp at Ogden.

No. 3. CAMP OF THE SURVEY AT FORT HALL, Idaho. (See Nos. 177 and 312.) At this point the wagons and all extra baggage were left behind, and the remainder of the journey effected with pack-animals.

No. 4. GROUP. Headquarters tent of the Snake River division.

No. 5. MOUNT HAYDEN, OR THE GREAT TETON. The highest peak in the Great Teton range, near the headwaters of Snake River, and lying upon the boundary between Idaho and Wyoming. It has an elevation of 13,858 feet above the sea, about 6,000 feet above the cañon shown in the view at the foot of the peak, and over 7,000 feet above Jackson's Lake, which stands under it on the opposite side. Our view is from the east, looking directly west. Although not the highest, it is the grandest and most alpine-like peak in the West. No others can show such abrupt angles and bold outlines, where snow even can rest only in small patches on the ledges. It gathers, however, in great masses in the bottom of the great cañon at our feet, 2,000 feet below. So far as known, it was ascended for the first time by Messrs. Stevenson and Langford, on the 29th of July, 1872. A full account of the exploit occurs in Scribner's Monthly for June, 1873.

No. 6. THE THREE TETONS, upright, including a narrow angle of view.

No. 7. THE THREE TETONS, oblong, including a wide angle of view. Views from one of the summits of the limestone ridges which form the western foot-hills of the Teton range, and at an elevation of 11,500 feet. This is the average height of the range, only the grand peaks in the distance rising above it. We look directly east over a broad, snow-covered plateau four miles wide, and just at the foot of the Tetons is the Grand Cañon, 2,000 feet below the surface. No. 5 was made from the other side of the small butte that lies directly under the Middle Teton.

Nos. 8, 9. PANORAMIC VIEW IN THE TETON RANGE, looking east and south, including a view of about 120 degrees. No. 8 is the same as No. 7. No. 9 looks south over the West Teton River, and up its right-hand fork. On the right-hand side of the cañon is an exposure of over 2,000 feet of limestone, very nearly perpendicular. The distance rolls away into the perpetually snow-covered plateau of the Summit range.

Nos. 10, 11. CAMP AT THE FOOT OF THE THREE TETONS, in the Teton Basin, and ten miles in a direct line from them. Elevation of camp, 6,646 feet. Mount Hayden, the highest Teton, rising 7,187 feet above it.

No. 12. GROUP OF ALL THE MEMBERS OF THE UNITED STATES GEOLOGICAL SURVEY. A simultaneous meeting of all of the divisions on the 15th of August, including sixty-two persons in all.

No. 13. UPPER FIRE-HOLE BASIN, from the crater of Old Faithful, a general view, looking down. In the middle distance is the Grand Geyser in eruption, and at the left is the Castle. Within the scope of this view are all of the largest and most active geysers. (See No. 439, page 43.)

No. 14. CRATER OF THE CASTLE GEYSER and the Beautiful Hot Spring. Upon the west side and midway in the Upper Basin. A castle-like form, built up to a height of forty feet by the deposition of the silica held in solution in the hot waters of the geyser. The eruptions are of long duration, lasting sometimes two and three hours, attaining a height of one hundred to one hundred and fifty feet.

The circular hot spring in the foreground is about twenty-five feet in diameter, funnel-shaped to a depth of forty feet, with a beautifully-scalloped border, one foot in height, and most delicately tinted in red and yellow, upon a white ground. The water is of a most perfect cerulean blue, shaded from an almost black center to lighter and more delicate hues in the more shallow portions. (See No. 295, page 31.)

No. 15. CRATER OF THE GROTTO GEYSER, situated near the lower end of the Upper Basin. An irregular mound, full of sinuous orifices, from which the water is projected in all directions during eruptions. The eruptions are quite numerous, going off nearly every three hours, each one lasting about fifteen minutes. (See also Nos. 297 and 298, page 31.)

No. 16. CRATER OF THE ARCHITECTURAL GEYSER, in the Lower Basin, showing the central portion only, of a total width of about sixty feet. The circular orifice from which the geyser issues is about twelve feet in diameter. It is constantly boiling, with irregular periods of eruption, throwing to a height of one hundred feet.

GREAT FALLS OF THE YELLOWSTONE.

No. 17. THE UPPER FALLS OF THE YELLOWSTONE, one half mile above the Lower Falls, and photographed from a point nearly over it, at a height of 400 feet above the river. Height, 140 feet. (See No. 245, page 27.)

No. 18. THE LOWER FALLS OF THE YELLOWSTONE, 397 feet in height; width of river at the brink, 100 feet. Photographed from a point one-fourth of a mile below the falls, and 300 feet above the bottom of the cañon. The perpendicular walls about the falls form the upper end of the Grand Cañon. (See No. 239, 1871 series.)

No. 19. THE LOWER FALLS OF THE YELLOWSTONE. Distant view, from the top of the cañon, bringing in the brilliantly colored and castellated walls of the cañon. (See No. 242, 1871 series.)

No. 20. THE GRAND CAÑON OF THE YELLOWSTONE, from a point directly over the Lower Falls and looking down. At this point the cañon has an average depth of about 1,500 feet, and of about the same width at the surface. The view embraces nearly one mile of its length. (See No. 248, 1871 series.)

No. 21. THE GRAND CAÑON, same as above, but the shape of the view is oblong instead of upright, embracing a very little wider angle of view.

No. 22. THE GRAND CAÑON OF THE YELLOWSTONE, from a point one mile below the falls. The walls are much more abrupt and the cañon 500 feet deeper than the preceding.

No. 23. TOWER FALLS, on Tower Creek, a small tributary of the Yellowstone, fifteen miles below the falls and about 500 yards above the junction of the streams. They are 132 feet in height, emerging from between great towers of closely-cemented breccia, that extend far up its cañon toward its source in Mount Washburn. (See No. 233, 1871 series.)

Nos. 24, 25, 26, 27. THE TERRACES AND BASINS OF THE MAMMOTH HOT SPRINGS, on Gardiner's River. The first is a profile view from below, the next two bird's-eye views from above, and the last a more extended view of one of the slopes. These springs cover an area of about four square miles, on the right-hand side of Gardiner's River, some three miles above its junction with the Yellowstone. The temperature of the principal springs varies from 120° to the boiling-point, and they hold in solution a large amount of calcareous matter, which has been deposited to a depth of many hundred feet. Upon the slopes the deposit takes the form of beautifully-scalloped basins filled with water of varying temperature, according to their remoteness from their source. The oxidation of the mineral substances contained in the water has stained the basins to every conceivable shade of red and yellow, forming rich contrasts to the vivid greens and blues of the waters. (See Nos. 215 to 225, 1871 series.)

No. 28. THE CAP OF LIBERTY, Mammoth Hot Springs. A calcareous mound, forty-five feet in height, from the apex of which at one time issued a hot spring, building up and growing higher, until finally it closed itself up and died out, there not being sufficient force to impel the water to a greater height. (See No. 227, 1871 series.)

Nos. 29, 39, 31. THE LOWER YELLOWSTONE VALLEY, a panoramic view looking south from the First Cañon. On the left is the Yellowstone Snowy range, extending to Emigrant Peak, thirty

miles away; then comes the broad park-like valley, six miles wide by thirty long, through the center of which flows the Yellowstone River. (See No. 200, 1871 series.)

No. 32. BRIDGER MOUNTAIN, Mont. Elevation, 9,000 feet above the sea, and 4,000 feet above Fort Ellis, distant some three miles south.

No. 33. NEEDLE ROCK in Bridger Cañon—southern base of Bridger Mountain. A detached mass of beautifully-stratified limestones, weathered into a sharp pinnacle, rising some two hundred feet above the bed of the creek.

Nos. 34, 35. MYSTIC LAKE, Mont. In the mountains about the head of the East Gallatin River, twelve miles south of Fort Ellis. As it is well stocked with most excellent trout, it is quite a pleasure-resort, despite the difficulties to encounter in reaching it. (See No. 197, 1871 series.)

No. 36. CAMP ON MYSTIC LAKE.

No. 37. PALACE BUTTE PARK, near the head of Middle Creek. A most romantic little spot, in the very heart of the Gallatin Mountains, distant about twenty-five miles southwest from Fort Ellis. Palace Butte, in the distance, rises nearly 3,000 feet above the valley.

No. 38. PALACE BUTTE, one of the spurs of Mount Blackmore, Mont., which has an elevation of 10,134 feet, and this portion of it rises abruptly nearly 3,000 feet above the valley at its foot.

No. 39. ARCHED FALLS, on Middle Creek, just above Palace Butte. The fall makes two leaps of about fifteen feet each, over the lower of which springs a natural arch, worn out of the solid basaltic rock.

No. 40. FALLS ON MIDDLE CREEK, about one mile above Palace Butte Park.

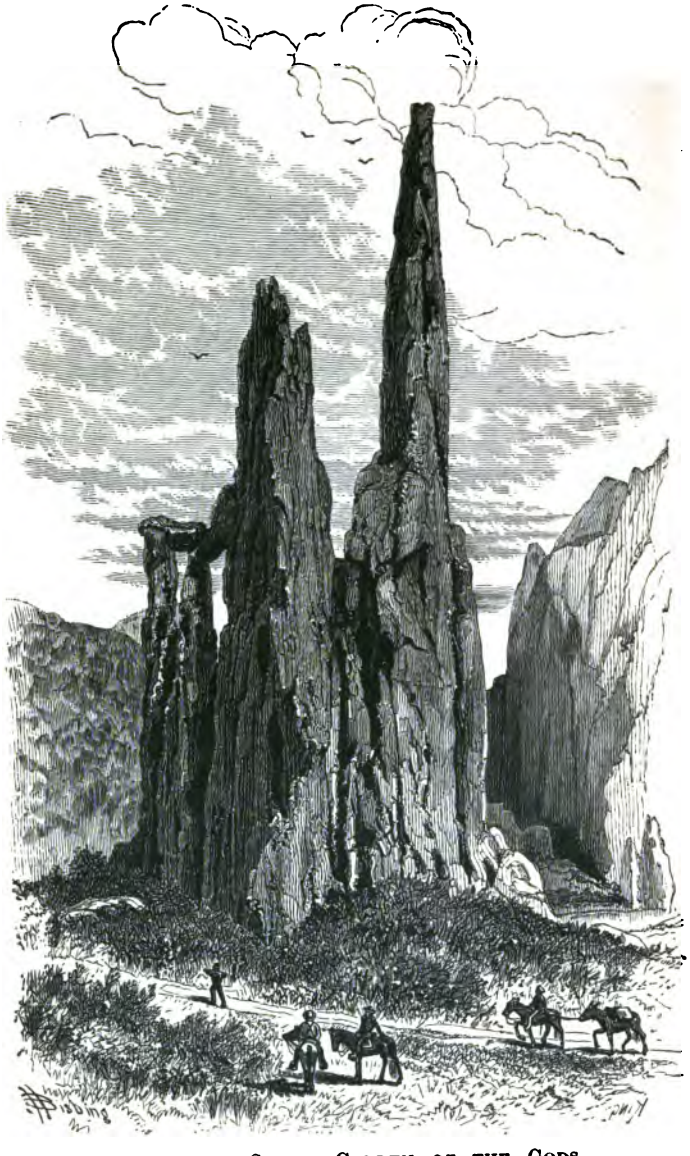
No. 41. THE CASCADE, near the sources of Middle Creek. But a short distance above lie the perpetual snows that feed the stream. Reaching the brink, the waters are first hurried down a sharp descent of five hundred feet, (the portion included in the above view,) and then descend in a long series of falls and cascades to the park-like little valley below.

No. 42. HEAD OF MIDDLE CREEK. The large amphitheater filled with perpetual snows, from which the creek is fed. The crest is the divide between the waters of the East and the West Gallatin.

No. 43. PALISADES ON THE WEST GALLATIN RIVER. Gallatin Cañon has a total length of about forty miles, the lower portion of which is extremely wild and rugged in its character. On the eastern side rise these majestic walls and pinnacles to a height of 2,000 feet.

No. 44. TRAIL IN WEST GALLATIN CAÑON, through the dense timber or forest growth, which has in some places obtained a footing among the immense masses of *débris* that have fallen down from the walls of the cañon.

No. 45. TRAIL OVER THE ROCKS, in West Gallatin Cañon. At the foot of the Palisades the trail is forced to the brink of the river, and over huge granite bowlders, for a distance of about a half mile, forming the most difficult and dangerous traveling the pack and saddle animals have to encounter. The river at this point is but a long series of rapids, averaging twenty-five feet in width and ten in depth.



CATHEDRAL SPIRES, GARDEN OF THE GODS.

(Negatives 8×10.)

Nos. 365, 366. GATEWAY, GARDEN OF THE GODS, Col., within three or four miles of Colorado City. A great wall of sandstone running up to 350 feet in height, through the center of which is a natural gateway of some 200 feet in width. The views are from opposite sides; in the first we have a glimpse of Pike's Peak, in the distance.

No. 367. CATHEDRAL ROCK, GARDEN OF THE GODS, Col., an end view of the great wall in which is the gateway.

No. 868. CATHEDRAL SPIRES, in the Garden of the Gods, a detached mass of spires and pinnacles, carved out of the prevailing red sandstone which has here been uplifted perpendicularly. The tallest spire is about 150 feet.

No. 369. LOOKING SOUTH from the Garden of the Gods, toward Cheyenne Mountain, an outlying spur, east of Pike's Peak.

No. 370. NEEDLE ROCK, Glen Eyrie, about one mile above the Garden of the Gods. Our view is a monolith, some 200 feet in height, and 20 feet in diameter at the base. In the same neighborhood are many other examples of the same peculiar weathering.

No. 371. GLEN EYRIE, a picturesque gorge through which Camp Creek cuts its way to its junction with Fountain Creek, at Colorado City.

Nos. 372, 373. GOLDEN CITY, COL. View from the foot-hills west of the city, looking east over the broad basaltic tables, flanking Clear Creek upon either side.

Nos. 374–379. CLEAR CREEK CAÑON. The route of the Colorado Central Narrow-Gauge Railroad to Blackhawk and Georgetown. One of the grandest and most picturesque cañons of the many which cut the Foot Hill range at right angles. The views extend up the cañon about eight miles, that being the end of grading at the time they were made.

Nos. 380, 381. CAÑON CASCADE in Waterfall Cañon, near Ogden, Utah, a cascade of some 300 feet, running down over beautifully-stratified white quartzites. Above it rises Ogden Mountain to a height of 9,716 feet.

No. 382. OGDEN, UTAH. From the same stand-point from which the preceding view was made, looking down into Salt Lake Valley over Ogden, distant about three miles, to Salt Lake and Promontory Point in the extreme distance.

No. 383. LOOKING NORTH from the table-land back of Ogden, showing the spur of the Wasatch Mountains, under which lie the Hot Springs.

Nos. 384, 385. HEAD OF LITTLE COTTONWOOD CAÑON, looking up from Central City. The cañon is about ten miles in length, rising in the very summit of the Wasatch Mountains, and comes out upon Salt Lake Valley seventeen miles south of Salt Lake City. It is noted as a mining-region, there being some of the richest silver-mines in the West located upon the sides of these mountains. The little mining-towns included in the views have an elevation of over 10,000 feet, and snow lies in their streets until long into summer. These views were made June 20, yet the snow lies so thickly as to render the roads nearly impassable.

No. 386. LOOKING DOWN LITTLE COTTONWOOD CAÑON from Central. It is from the precipitous sides of the cañon, as shown on the left, that the frequent avalanches or snow-slides occur, with such fatal results to those who may be caught by them.

No. 387. GRANITE PEAK, LITTLE COTTONWOOD CAÑON, about half way down. It rises nearly 3,000 feet above the creek at its foot, and is a solid mass of the beautiful granite characteristic of the cañon.

No. 388. QUARRYING GRANITE in Cottonwood Cañon, seventeen miles south of Salt Lake City, for the Mormon Tabernacle. The ground is completely strewn with immense bowlders and detached masses of granite, which have fallen down from the walls of the cañon on either side, some of which are from thirty to forty feet square. All the quarrying is confined to splitting up these blocks.

Nos. 389, 390. VIEW OF THE WASATCH MOUNTAINS from the Twin Peaks to the spur that separates Salt Lake from Utah Lake. The Twin Peaks fall but a little short of being the highest in the range, not far from 12,000 feet above the sea.

No. 391. TWO YOUNG CINNAMON BEARS, about two months old, captured in the mountains near Ogden.

No. 392. POINT OF THE MOUNTAIN, ten miles south of Salt Lake City, near the Hot Sulphur Springs.

No. 393. WILLARD CAÑON, in the above spur of the Wasatch Mountains.

No. 394. WILLARD CITY, fifteen miles north from Salt Lake, a Mormon village of some 900 souls. Over the village a glimpse of Bear River Bay, of Salt Lake, is had.

No. 395. BEAR RIVER HOTEL AND BRIDGE, the crossing on the line of the old stage-line from Ogden to Montana.

Nos. 396, 397. PANORAMIC VIEW OF MALADE, Utah, from the bluffs back of the town, looking south down the valley; a Mormon settlement of about 1,200 inhabitants.

Nos. 398, 399. PORTNEUF CAÑON, Idaho, looking down from the great bend, about midway in the cañon. (See No. 175, 1871 series.)

Nos. 400, 401. PORTNEUF CAÑON, looking up from same stand-point.

No. 402. PORTNEUF MOUNTAINS, lying to the east of the cañon. They are covered with a thick mantle of snow, which fell during the night of the 2d of July.

No. 403. CRATER BUTTES, or extinct volcanoes, on Henry's Fork, near its junction with Snake River. They are prominent landmarks for many miles along the line of the stage-road. The larger one of the two, as shown in one view, rises about 500 feet above the plain, upon a base about one and a half miles in diameter. Its crater is about half a mile in diameter, and one hundred and fifty feet deep.

No. 404. KENILWORTH CASTLE, a mass of volcanic sandstone, lying near the base of the butte, that has been washed away to its present form; is about fifty feet high and one hundred long.

No. 405. A GROUP OF COTTONWOODS on the Middle Fork of the Teton River, in the Teton Basin.

No. 406. PERMANENT CAMP OF THE SURVEY during the exploration of the Teton range, situated at the foot of the main cañon that comes down from the Three Tetons, and distant in an air-line about ten miles from them. Elevation of camp, 6,646 feet.

Nos. 407, 408. A PANORAMIC VIEW IN THE TETON RANGE, from a point about seven miles west of them, including an angle of about 90°. Elevation of stand-point, about 10,000 feet, and of the highest Teton, 13,858 feet.

No. 409. THE THREE TETONS, from a prominent stand-point, looking across the left-hand cañon of West Teton River and over the broad snow-covered plateau, extending up to the foot of the Tetons. The views Nos. 415 to 419 were made from under the other side of the small butte that lies directly under the middle peak.

Nos. 410–414. A COMPLETE PANORAMIC VIEW, in five sections, sweeping the whole horizon from a stand-point having an elevation of nearly 11,000 feet. The Tetons occupy the first view, and the others sweep around and join it on the left. From their great elevation, and their abrupt, pointed outlines, visible in all directions from great distances, they have long been noted land-marks for travelers. They are described for the first time in Irving's Astoria, as the Pilot Knobs. Only three peaks are seen from a distance, but there are really a score, grand in themselves, were they not overshadowed and hidden by their more majestic neighbors. To the south and southeast we look over great canoñs and broad, snow-covered plateau mountain-tops, to nameless and numberless peaks in the dim distance. To the north are long serrated mountain-ridges, rugged, bare, and snow-streaked. To the west are two great snow-covered sentinels, and beyond them the great plane of the Snake River. All these views were taken about August 1, when there was the least quantity of snow in the year.

No. 415. VIEW IN THE TETON RANGE, looking west from a point about three miles from the Tetons, and from the edge of the great cañon that separates them from the abutting quartzites.

No. 416. VIEW LOOKING NORTH to the sharply-serrated peaks lying north of the Great Cañon.

No. 417. VIEW LOOKING SOUTH across the great snow-covered plateau, thickly scattered over with rugged and precipitous mountain-peaks.

No. 418. VIEW SOUTHEAST. A continuation to the left of the preceding view, showing the two lesser Tetons and the head of the Great Cañon. In the foreground is the edge of the precipice, that drops down perpendicularly 2,000 feet to the cañon below.

No. 419. MOUNT HAYDEN, or the Great Teton, the highest of the Three Tetons, having an elevation of 13,858 feet above the sea. It is nearly 6,000 feet above the bottom of the Great Cañon, as shown in the view, and over 7,000 feet above Jackson's Lake, on the opposite side. Immediately in front is the Great Cañon, sweeping around to the north and east, showing the full depth of over 2,000 feet. On the 29th of July, 1872, Messrs. Stevenson and Langford succeeded in reaching its summit, after a series of most thrilling adventures and hair-breadth escapes; and as they were, in all probability, the only white men who ever accomplished the ascent, claimed the right to name the mountain.

No. 420. A VIEW LOOKING DOWN THE SOUTH FORK OF TETON RIVER, three miles above the junction.

No. 421. CAMP AMONG THE PINES, at the forks of West Teton River, of the photographers of the survey.

No. 422. MOOSE CAMP of the photographers, in the Teton Cañon, three miles above its mouth. So named from the killing of three moose close by. One of the small ones is hanging by the tent.

No. 423. PHOTOGRAPHING IN HIGH PLACES. A common experience among the Tetons. The series included in Nos. 410 to 414 were taken from this point.

No. 424. CAMP OF THE SURVEY, upon Middle Fork. Second day from the Tetons, going north.

Nos. 425, 426. HENRY'S LAKE, Idaho, a shallow body of water, about three by two miles in diameter, and full of small, scattered islands, and the source of Henry's Fork. It is well stocked with most excellent trout. At this point are four remarkable passes through the range, Tyghee and Red Rock, on the east and west; Raynolds, or the Madison, on the north; and Henry's Lake, on the south. Elevation of lake, 6,492 feet; Tyghee Pass, 7,063 feet; Red Rock Pass, 7,271 feet; Raynolds, 7,911 feet. The view is taken from the north, looking south, over Sawtell's ranch.

Nos. 427–430. PANORAMIC VIEW OF HENRY'S LAKE, from a point on the east side, between Raynolds and Tyghee Passes, embracing a view from Raynolds Pass, on the right, past Red Rock and Henry's Lake Passes, to Tyghee on the left. In the center is Sawtell's Peak, a well-defined extinct volcano, 10,600 feet in height, with a crater 1,000 feet in depth, and one and a half miles across its longest diameter.

No. 431. SAWTELL'S RANCH, at the northern end of Henry's Lake. Messrs. Sawtell and Wurtz, the pioneers of this region, have built themselves very comfortable quarters by the side of a very fine, large spring. They catch large quantities of fish from the lake, for which they find a ready market in Virginia City and the mining-towns. Large game of all kinds is abundant.

THE GEYSER BASINS ON FIRE HOLE RIVER.

(See 1871 series.)

The great geyser fields on the Fire Hole Branch of the Madison River are divided into two basins, the upper and the lower, about ten miles apart. The latter is much the largest, but the former contains nearly all of the great spouting geysers. The lower basin is noted for the size, beauty, and number of still hot-springs, which possess a serene beauty of their own, rivaling fairly the majesty and power of the thundering geysers.

No. 432. MUD PUFFS, or Hot Mud Spring, in the Lower Geyser Basin, a mass of pure white boiling mud, sputtering at a lively rate, and throwing it out all around, forming the raised bank about it.

No. 433. CRATER OF THE ARCHITECTURAL GEYSER, Lower Basin, at the upper end of a valley that extends up from the Fire Hole River.

No. 434. THE GREAT HOT SPRINGS, midway between the Upper and Lower Basins, and on the west side Fire Hole River, a vast accumulation of siliceous matter, built up fifty feet above the river, upon the summit of which are three very large boiling springs, the largest being 250 feet in diameter.

No. 435. VIEW IN THE UPPER FIRE HOLE BASIN, looking up the river. Upon either side are the high siliceous banks, bordered with numerous hot springs and ornamental borderings. In the distance we get a glimpse of the Bee-Hive in eruption.

No. 436. VIEW LOOKING DOWN IN FIRE HOLE, from same stand-point as above.

No. 437. CRATER OF THE CASTLE GEYSER, near view, from between it and the Beautiful Hot Spring lying next the river.

No. 438. BEAUTIFUL HOT SPRING and crater of the Castle, same as No. 295.

No. 439. CRATER OF THE OLD FAITHFUL, at the upper end and southern end of the basin, so named from the regularity of its eruptions, occurring once an hour with but very slight variations. (For views of the eruptions, see stereoscopic series, Nos. 546, 547.) It has built up a mound about twenty feet in height, with some most beautiful cauliflower-like formations, exquisitely beaded, with thousands of pearls, and, when wet after the eruptions, each one glistens and sparkles like the real gem. The orifice is about three feet in diameter.

Nos. 440, 441. OLD FAITHFUL IN ERUPTION; not as good as the stereoscopic views, but still giving a good idea of the force and grandeur of the up-lift to such great height (150 feet) of so large a body of hot water.

No. 442. CRATER OF THE BEE-HIVE GEYSER. On the opposite side of the river from the Castle and Old Faithful. A very symmetrical cone, about five feet in height and six feet in diameter at its base. It is most beautifully beaded all over its exterior surface with small pearl-like drops of silica. Its eruptions are of great force, throwing a stream fully two hundred feet in height, and holding it up with perfect steadiness for a period of from ten to fifteen minutes.

No. 443. CRATER OF THE GIANTESS GEYSER. It has a large, deep orifice, twenty by twenty-five feet in diameter, and when empty showing a depth of eighty feet. Our view represents it nearly full, just previous to an eruption. In 1870 its eruptions were recorded by Langford as being over 200 feet in height.

No. 444. CRATER OF THE GRAND GEYSER. Nearly opposite the Castle, and so named from the great force and power it displays in its eruptions, varying from 150 to 250 feet in height. For a space of ten feet about the crater the surface is elegantly adorned with beautifully-scalloped little reservoirs, filled with the clear, transparent waters from the geyser.

Nos. 445, 446. A DISTANT VIEW OF THE CASTLE IN ERUPTION, from across the river, near the Giantess, about 750 yards distant. This eruption lasted fully two hours, and averaged 100 feet in height; it was accompanied with a loud rumbling noise, and shook the earth near by. In the foreground is one of the small hot springs, so numerous throughout the basin.

No. 447. TURBAN GEYSER, adjoining the Grand, within a few feet, the ornamentations about them being identical. The eruptions are not very great, not more than twenty or thirty feet in height.

No. 448. THE GROTTO, a near view of the crater, showing the beading and crystalline whiteness of the whole mass. (See Nos. 297, 298, 1871 series.)

No. 449. HOT SPRING BASIN, similar to those in Nos. 295 and 445, but most beautifully scalloped and beaded. Is about five feet in diameter. Occasionally it overruns its basin, and then recedes to a considerable depth, but never ejecting its waters as violently as a geyser.

THE MAMMOTH HOT SPRINGS ON GARDINER'S RIVER.

A series of twelve negatives made by J. Chrissman, of Bozeman, Mont. They are fully described in Nos. 214 to 231 of the 1871 series.

Nos. 450, 451. GROUP OF LOWER BASINS, on the main terrace.

Nos. 452–454. GROUP OF THE UPPER BASINS, on the same terrace.

Nos. 455–457. GROUPS OF SMALL, FLOWING SPRINGS, and sulphur vents, back of the Great Central Hot Spring.

No. 458. THE CAP OF LIBERTY. (See No. 227.)

No. 459. FALLS ON THE RIGHT FORK OF GARDINER'S RIVER, in a deep, dark, almost impenetrable gorge, about two miles above the springs.

Nos. 460, 461. FALLS ON THE LEFT FORK OF GARDINER'S RIVER, three miles above the springs, in a deep gorge, across the end of which runs a basaltic wall, over which tumbles the water in a cascade about eighty feet in height.

No. 462. EMIGRANT PEAK, view from Boteler's ranch. (See No. 204, 1871 series.)

No. 463. MOUNT BLACKMORE, Mont. Twenty-five miles south of Bozeman, lying in the heart of the Gallatin range. William Blackmore, esq., a wealthy English gentleman, deeply interested in the prosperity of our institutions, accompanied by his estimable wife, came to Bozeman to accompany the survey as a guest, leaving her there until his return from the trip to the head of the Yellowstone. During his absence, she grew suddenly ill, and expired before he could reach her. In memory of this sad event, and also the high estimation in which Mr. Blackmore is held, this mountain has been named as above. Elevation, 10,600 feet.

No 464. BRIDGER MOUNTAIN, the southern spur of the Gallatin Mountains, overlooking the broad and fertile valley of the Gallatin. Elevation, 9,002 feet.

Nos. 465, 466. BRIDGER CAÑON. Bridger Creek cuts down deep through beautifully-stratified limestones, exposing perfectly vertical walls on the northern side.

Nos. 467, 468. THE NEEDLE, in Bridger Cañon. A detached mass of rock, weathered into a sharp pinnacle.

No. 469. MAJOR PEASE'S RANCH, on the Yellowstone, three miles above the First Cañon. Large droves of cattle are herded here, and as the winters are comparatively mild, require but little care throughout the whole year.

Nos. 470, 471. VALLEY OF THE YELLOWSTONE, looking south from the First Cañon, same as No. 200 of 1871 series, but from a higher stand-point.

No. 472. MYSTIC LAKE, twelve miles south of Fort Ellis. (See 196.)

No. 473. MYSTIC LAKE, looking up from the promontory extending out into the lake, about midway on the right-hand side.

No. 474. MYSTIC LAKE, from same place, looking down toward the outlet.

No. 475. PALACE BUTTE, on Middle Creek, near its source, one of the spurs of Mount Blackmore.

No. 476. CAMP IN PALACE BUTTE PARK. Upon the head of Middle Creek, and about the southern base of Mount Blackmore, is some of the grandest and most picturesque scenery to be found in Montana. There are many little park-like vistas, interspersed with rugged cañon scenery, filled with cascades.

No. 477. THE TWIN BUTTES, lying but a short distance above Palace Butte, and rising up nearly 3,000 feet above the rugged cañon at their feet.

No. 478. ARCHED FALLS, directly under the Twin Buttes. The creek abounds for nearly its whole length in falls, cascades, and rapids. The above is in a deep, dark gorge, flowing over a dike of basaltic rock, and under a natural archway thrown out from the top to the bottom of the fall; is about thirty feet in height.

No. 479. FALLS NEAR THE HEAD OF MIDDLE CREEK, and at the foot of the long cascade shown in No. 41 of the 11×14 series.

No. 488. VIEW IN MIDDLE CREEK CAÑON, showing its southern face.

No. 481. VIEW DOWN MIDDLE CREEK CAÑON from same stand-point.

No. 482. HEAD OF MIDDLE CREEK. A view showing the large amphitheater filled with snow, and from which Middle Creek finds its sources.

Nos. 483, 484. VIEW NEAR THE MOUTH OF WEST GALLATIN CAÑON. A limestone mountain on the east side of the canon, lying directly upon the volcanic rocks, an exposed face bordering the river, showing the line of junction.

No. 485. THE PALISADES OF THE WEST GALLATIN. Towering castellated walls and pinnacles of granite rising to a height of 2,000 feet above the river.

No. 486. TRAIL OVER THE ROCKS.

No. 487. TRAIL THROUGH THE WOODS of West Gallatin Cañon. (See Nos. 44 and 45, 11×14 series.)

No. 488. BLUFFS on the head of the West Gallatin, about 60 miles above the mouth of the cañon.

No. 489. SHADOW LAKE on the summit of the divide, between the West Gallatin and the Yellowstone. Elevation above the sea, 9,347 feet, and 4,332 feet above Yellowstone at Boteler's.

The following views, from 490 to 500, inclusive, were made by J. Chrissman, of Bozeman, Mont., who accompanied Professor Hayden's division of the survey, and visited those localities not reached by the photographers of the survey.

Nos. 490, 491. CAÑON OF THE UPPER MADISON, between Gibbons's Fork and the Fire Hole River. It is here a long series of swift cascades, flowing between vertical walls of trachytic rock.

Nos. 492, 493. PULPIT ROCK, in one of the small side cañons of the Middle Cañon of the Madison. A detached mass of limestone from the mountain side, about 150 feet in height, pulpit-like in form.

No. 494. A VIEW ON THE MADISON below the Great Middle Cañon.

No. 495. A VIEW LOOKING UP toward the Middle Cañon from below.

No. 496. HYDRAULIC MINING in Alder Gulch, near Virginia City, Mont. (Same as 190.)

No. 497. HELENA, MONT. A lively, thriving city of about 5,000 inhabitants, sustained chiefly by the mining operations carried on extensively all about it.

No. 498. TROUT CREEK FLUME, carrying the water so necessary to the miners, near Helena.

No. 499. A MONTANA RANCH, comfortable if not elegant, and the home of many well-to-do persons engaged in mining or stock-raising.

No. 500. THE SUCCESSFUL HUNTER. Fred. Boteler, who accompanied the survey as hunter, killed, within an area of fifty feet diameter, five large elk, before breakfast. The view shows them as they fell, with the hunter in the center of the group. The locality is on Yellowstone River, about three miles above the Great Falls.

No. 501. A YOUNG MOOSE, domesticated on Major Pease's ranch, on the Yellowstone.

Nos. 502, 503. HEAD OF AN OLD FEMALE MOOSE and one of the young ones, killed at the camp at the Tetons. (See No. 422.)

Nos. 504–507. GROUPS OF FOUR YOUNG BUFFALO CALVES, domesticated on Major Pease's ranch. They are about four months old, and of the real mountain-bison type, being caught high up in the mountains, about the head of East Fork. Turned in with the cows of the cattle-herd, they very readily took up with the new *régime*.

Nos. 508, 509. GROUPS OF YOUNG ELK, caught at the same time and place, and undergoing the same domestication.

No. 510. GROUP OF ALL THE MEMBERS OF THE SURVEY, taken in Fire Hole Basin the day after the simultaneous arrival of all the different divisions.

Nos. 511, 512. "THE DIAMOND HITCH," or the operation of "packing" a mule. The entire transportation of the survey was effected, by packing, each mule carrying on an average about 250 pounds, and so arranged upon the pack-saddle or *aparejo* by a system of "hitches" as to withstand all the vicissitudes of mountain traveling.

Nos. 513–525. MISCELLANEOUS GROUPS of the members of the party by "messes" and by corps divisions.

STEREOSCOPIC VIEWS.

Nos. 490–492. CLEAR CREEK CAÑON, Colo.

No. 493. LITTLE COTTONWOOD CAÑON, Utah.

No. 494. GRANITE PEAK, Little Cottonwood.

No. 495. QUARRYING GRANITE for the Mormon temple.

No. 496. GRANITE QUARRY in Little Cottonwood.

Nos. 497, 498. CAÑON CASCADE, near Ogden.

No. 499. WILLARD CAÑON, ten miles north from Ogden.

No. 500. PORTNEUF CAÑON, Idaho.

No. 501. CAÑON OF THE MIDDLE FORK OF THE TETON RIVER.

No. 502. CAMP at the foot of the Three Tetons.

No. 503. HAYDEN'S PEAK, or the Great Teton.

Nos. 504–514. THE THREE TETONS and the range from the two standpoints of Nos. 5 and 7 of 11×14 series, and sweeping the whole horizon in panoramic series.

UPPER FALLS OF THE YELLOWSTONE.

No. 515. PHOTOGRAPHING IN HIGH PLACES.
Nos. 516–521. STUDIES on the Left Fork of Teton River.
Nos. 522–529. STUDIES on the Right Fork of Teton River.
No. 530. VIEW down the Right Fork.
No. 531. HENRY'S LAKE, Idaho.
No. 532. SAWTELL'S RANCH, on Henry's Lake.
Nos. 533, 534. INTERIOR OF SAWTELL'S RANCH.
No. 535. MUD PUFFS, Lower Fire Hole Basin.
No. 536. HOT SPRING POOLS, Lower Fire Hole Basin.
No. 538. SMALL GEYSER CRATER, Lower Fire Hole Basin.
No. 539. ORNAMENTAL HOT SPRING, Lower Fire Hole Basin.
No. 540. CRATER OF FOUNTAIN GEYSER, Lower Fire Hole Basin.
No. 541. GENERAL VIEW of Lower Fire Hole Basin.
No. 542. STEAM JET in Lower Fire Hole Basin.
No. 543. GREAT HOT SPRING, between Upper and Lower Basin.
No. 544. UPPER FIRE HOLE BASIN, looking up.
No. 545. UPPER FIRE HOLE BASIN, looking down.
Nos. 546, 547. OLD FAITHFUL IN ERUPTION.
Nos. 548–550. CRATER OF OLD FAITHFUL.
No. 551. CRATER OF THE BEE-HIVE GEYSER.
No. 552. CRATER OF THE GIANTESS GEYSER.
No. 553. CRATER OF THE GRAND GEYSER.
No. 554. CRATER OF THE GROTTO GEYSER.
No. 555. THE GROTTO IN ERUPTION.
No. 556. SOUNDING THE GROTTO.
No. 557. DISTANT VIEW OF THE CASTLE IN ERUPTION.
No. 558. CRATER OF THE CASTLE AND HOT SPRING BASIN.
Nos. 559–563. HOT SPRING POOLS OF THE UPPER BASIN.
No. 564. TOWER FALLS.
Nos. 565–567. MAMMOTH HOT SPRINGS, on Gardiner's River, Lower Basins.
Nos. 568–573. MAMMOTH HOT SPRINGS, on Gardiner's River, Upper Basins.
No. 574. CAP OF LIBERTY, at Mammoth Hot Springs.
No. 575. EMIGRANT PEAK, from Boteler's.
Nos. 576, 577. VALLEY OF THE YELLOWSTONE.
Nos. 578–584. BRIDGER CAÑON, near Fort Ellis, Mont.
No. 585. MYSTIC LAKE, twelve miles south of Fort Ellis.
No. 586. PALACE BUTTE, Middle Creek.
No. 587. PALACE BUTTE PARK, Middle Creek.
No. 588–593. VIEWS IN THE UPPER CAÑON of Middle Creek.
Nos. 594, 595. ARCHED FALLS, Middle Creek.
Nos. 596–599. CASKADE of Middle Creek.
No. 600. MOUTH OF WEST GALLATIN CAÑON.
Nos. 601, 602. TRAIL IN THE WOODS.
No. 603. TRAIL OVER THE ROCKS.
Nos. 604, 605. PALISADES OF THE WEST GALLATIN.
Nos. 606, 607. VIEW IN THE MIDDLE CAÑON.
No. 608. CAMP ON THE WEST GALLATIN.
No. 609. UPPER CAÑON, West Gallatin.
Nos. 610, 611. SHADOW LAKES on the Divide.
Nos. 612–614. FALLS ON GARDINER'S RIVER, near Hot Springs.
Nos. 615, 616. UPPER MADISON CAÑON.
No. 617. LOWER MADISON CAÑON.
No. 618. HYDRAULIC MINING IN ALDER GULCH.
No. 619. MINERS' CABINS, in Alder Gulch.

No. 620. BEAVER HEAD ROCKS.
No. 621. HOT SPRINGS HOTEL, near Helena.
No. 622. TROUT CREEK CAÑON.
No. 623. HELL-GATE CAÑON.
No. 624. AVALANCHE CAÑON.
No. 625. MOUNTAIN CEDAR.
Nos. 626–636. BANNACK INDIANS.

1873 SERIES.

The following is from the American Journal of Arts and Sciences, vol. vi, December, 1873, and affords an excellent introduction to the series:

United States Geological Survey of the Territories, F. V. Hayden, Geologist in Charge. Photographs of 1873.—We have received an interesting selection from the photographic views taken by Professor Hayden's survey in Colorado this summer, and hasten to lay before the readers of the Journal some account of the operations of the survey in this department.

The photographic work was this year again in the charge of Mr. W. H. Jackson, who has approved in previous campaigns his skill as a workman, his enterprise and persistence as an explorer, and his good judgment in the selection of his subjects. To his party were joined, during most of the summer, the collectors in natural history. They began work near the end of May, about Long's Peak; the snow prevented them from ascending the mountain itself so early. Their views of the peak, however, and of the beautiful little Estes Park at its foot, were very successful. They then moved southward through the Front range as far as Gray's Peak, getting the whole panorama on the way, and taking from Gray's itself a connected series of views around the horizon. The same was done again from Pike's Peak, to which the party next moved, visiting on their way Chicago Lake, Bear Creek, the Platte Cañon, and the remarkable tracts of fantastically-worn sandstone known as Monument Park and the Garden of the Gods. From there they traversed South Park, and after again taking panoramic views from Mount Lincoln, joined near Fairplay the party of the chiefs of the survey, and accompanied them to Weston Pass, Twin Lakes, and other points on the valley of the Arkansas, across the National range and into the Elk Mountains, and finally up the Arkansas and beyond its headwaters to the Mount of the Holy Cross, returning thence to Denver and breaking up on the 5th of September. Panoramic views were taken from La Plata Mountain, in the National range, and from White Rock Mountain, in the Elk group.

The total number of views taken during the campaign is nearly 300, half of them being stereoscopic, half the remainder 5×8 inch plates, and the rest the large 11×14 inch plates. They fairly cover the region traversed, in its various aspects. The interests of science were especially considered in the selection of subjects, and it was designed that the panoramic views should combine, with the drawings of Mr. Holmes, the artist of the survey, (drawings, it is believed, rarely equaled for their comprehensiveness, minute accuracy, and artistic truth of expression,) to make the reported facts thoroughly reliable, and to bring before the apprehension of lovers of nature, whether for her beauty or her history, the grand scenery of the grandest part of the Rocky Mountains. The high panoramas will need, in part, to be judged by their intent to display the structure of regions which few have visited, or can expect to visit. The lens is far behind the eye in its power to appreciate the distances in such views, and to discover the far off and faint. And while there is plenty of sublimity in scenes where heights of 12,000, 13,000, and 14,000 feet count by scores, and vast amphitheaters and deep gorges are

on every hand, they are not precisely *picturesque* in the proper sense; they are not manageable into pictures. Those who have seen both, give the preference in this respect to the Sierra Nevada over the Colorado Mountains. Especially the great volcanic peaks of the western coast, raising their majestic isolated cones from a low base, are more powerfully impressive than ranges where lines of peaks and crests of immense but equal altitude ascend from bases already at 7,000 to 10,000 feet. There are few summits in Colorado which are lifted more than 6,000 feet above their immediate surroundings. The barrenness of these mountains, too, as regards both white snow and green vegetation, in the mass, detracts from their effectiveness.

Almost everywhere the snow lies in summer only in lines and patches, which, though of no small absolute dimensions, are petty as compared with the great mountain-masses. The only marked exception this summer (when the snow was much less, to be sure, than the average) was the eastern amphitheater of one of the great peaks of the Elk Mountains, where there is an unbroken sheet a full mile wide, and covering half a mile of downward slope. This does not appear among the views taken; the survey were able to approach the mountain only from the rear. Even here, of course, is no glacier; the snow reaches the valley below, only as water, after collecting in one of those intensely green lakes which dot the high slopes of these mountains, as of the Alps; the combined beauty and grandeur of the Swiss ice-rivers is altogether wanting. At the same time the evidences of former glacial action on an immense scale are abundant and striking, and views of them are among the most valuable of Mr. Jackson's pictures. There is, for example, the picture (taken from 1,300 feet above it) of the great glacier-trough leading down from the Holy Cross Mountain, and filled for miles with *roches moutonnées* on the grandest scale—sheep-backs up to 50 feet high and hundreds of feet long, all rounded and smoothed, and crowding one another so closely as to be almost impassable. The nearer views, taken from amid these ridges themselves, and showing the fallen timber with which the spaces between them are filled, give a lively sense of the delights of traveling among them. One of the most striking pictures of the series is that of this Holy Cross Mountain itself, with its white cross, 1,500 feet long, on its front. It was to gain this view that the party (as mentioned in our October number above, p. 299) had to climb all day, with 50 pounds of apparatus on each man's back, and then to spend the night near the summit, without food or shelter. Other important glacial views are those of the great moraines at the eastern base of the National range, along Arkansas Valley. The most remarkable of them, stretching out from the mouth of the regular and deeply-penetrating valley of Clear Creek, are two or three miles long and 700 feet high, and from the opposite heights seem as regular as railway embankments. The Twin Lakes, a few miles farther up the valley, the lovely situation and beauty of which are well illustrated by a series of views, are themselves also interesting results of glacial action, nestled between vast moraines in front and vaster mountains behind. Even the narrow bar that separates them is but a terminal moraine, dropped across their basin by a freak of the retreating glacier.

In the three more easterly ranges there is great uniformity of material; almost everything is granite and gneiss; and the variety is that of eroded form. In the National range, especially, there is not a trace of sedimentary rock through its whole extent of 80 miles. With the Elk Mountains the case is very different, and some of their striking

and peculiar features are brought clearly to light by these views. They have a wonderful variety of coloring also, which unhappily photography is unable to produce. From the top of Italian Mountain, for example, (so named from its presenting in brilliancy the Italian colors, red, white, and green,) nearly the whole structure of the group can be read in the contrasts of coloring: the light gray of the granitic and eruptive nucleus, with the numberless peaks of sandstone about it, the strata conspicuously dipping away in every direction, and in two shades of red, a lighter and a darker, the latter a rich maroon color. There are few more beautiful scenes than the Grand Teocalli, as seen from the mouth of the short valley (some three miles long and a mile broad, between high walls) which leads from it down to the East River, a vast pyramid, 2,700 feet high, of most regular form, in bare steps and courses of maroon red at the summit, and with the same color blushing, as it were, with a most peculiar effect, through the thin, grassy covering of its lower slopes.

Besides these grander views, illustrative of the geography and geology of the region, there is the usual proportion, in the usual variety, of minor items of scenery, such as water-falls, lakes natural bridges, bits of ravine, and strange rock-forms. Conspicuous among these last are the almost incredible shapes of eroded sandstone columns in Monument Park.

W. D. W.

(Negatives 11 × 14.)

Nos. 46, 47. LONG'S PEAK, VIEW FROM ESTES PARK, on the northwest, distant about twelve miles from the summit. The park is about four by six miles in diameter, lying inside the foot-hill range and close under the main range. Being well sheltered and easy of access, it is proving to be a most excellent pasture for large herds of cattle. A few families have also settled here, and taken up permanent homesteads. It is quite a pleasure-resort, and as the only practicable route for ascending the peak leads up from this valley, it is destined to become a favorite stopping-place for health-seeker and traveler. The Big Thompson, draining all this region, is an excellent trout-stream, and in season affords most excellent fishing.

Long's Peak, as seen from the plains, is the most prominent in the front range, rising sharply high above the surrounding peaks. Its elevation is 14,271 feet, and about 6,300 feet above the park. Composed entirely of the primitive rocks, it has bold, decided outlines, great walls, and deep cañons, and about its northwestern base particularly are said to be gorges and cañons among the grandest on the continent.

Its summit is divided into two sharp crests, the most western one being the highest and most difficult of ascent. The trail leads directly up to timber-line, and then passes around to the north and west, from which direction only the summit can be reached. No. 47 is from Prospect Mountain, standing isolated on the southern edge of the park, about 1,000 feet in height, and affording most excellent panoramic views.

Nos. 48–50. LONG'S PEAK, a panoramic view, in three sections, from the summit of the divide, between the waters of the Saint Vrain and the Boulder, southeast about ten miles from the peak. In the first, or left-hand view, we are looking a little north

of west, showing the line of sharp snowy crests that extend southward. Among them rises the Saint Vrain, flowing down through the deep gorge in the center of the view. In No. 49 the peak occupies nearly the whole view, but it is only the most easterly of the twin summits, the highest one being beyond and hidden by it. No. 50 is an extension of the view eastwardly, giving us a glimpse of the range lying to the north of Estes Park. In the center, Mount Lilly, a ridge of gneissic schists and quartzites, rises about 2,500 feet above the plateau. The foreground of these three views is characteristic of all the country lying inside the foot-hills, a great plateau of granites, seamed and furrowed into deep ravines and cañons, and covered to a great extent with dense groves of pine.

Nos. 51–53. A PANORAMIC VIEW OF THE COLORADO OR FRONT RANGE, as seen from Bald Mountain, about three miles west from the Ward mining-district, embracing a view from Long's Peak on the north, to near Arapaho on the south. In the foreground is one of the little snow-fed lakes, so numerous throughout the mountains, and forming a pleasant variety to the monotony of numberless snow-white peaks. Although this view was made late in June, it will be seen that the hill-sides are heavily draped in a mantle of snow, lying very deep through all the forest. The difficulty of reaching even this altitude was very great, requiring most laborious plunging through the thick timber and deep drifts. At the extreme left in the first view are the two sharp crests of Smith's Peak. In the center is a number of grand peaks, but nameless. In No. 52 the large rounded summit of "Jim" Peak is most prominent. In the last of the series the eye is carried past Audubon to Long's Peak, away to the north about fifty miles. This lake has an elevation of 12,000 feet, and the average height of the range is some, 2,000 feet above it.

Nos. 54–56. THE FRONT RANGE, a panoramic view from Prospect Mountain, about two miles north of the North Boulder. The first view to the left is over the broad plateau, bordering the range, to James Peak, distant about twenty miles. The next view is a continuation of the panorama northward across the headwaters of the Boulder. Among the hills in the distance are the town and the famous mines of Caribou. The town of Middle Boulder and the reduction-works are about four miles below, in the valley. Beyond the hills the very tip only of Arapaho can be seen. In No. 56, Smith Peaks are again shown, and a portion of the Bald Mountains, from near which the previous series were taken.

No. 57. CASTLE ROCK, IN BOULDER CAÑON, five miles below Middle Boulder, near the head of the cañon. It is a solid mass of granite, standing out detached from the walls of the cañon, the river describing a half circle about it, sweeping close to its base. It is conical in form, rising to a height of about 250 feet, and is often called Hay-Stack Rock.

No. 58. BOULDER CAÑON. Close under the lower side of Castle Rock, the river hugs its sides so closely that the roadway is forced to leap the stream, as shown in the view, and follow down the opposite side until the same conditions occur again. The roadway is a most excellent one, built only after great

labor and expense. The cañon is about seventeen miles in length, cutting deep down through the metamorphic rocks of the foot-hills, so that in some places the sides of the cañon rise up nearly 3,000 feet above its bed. The Caribou mines, at the head of this cañon, are among the richest in Colorado, and the transportation between them and railroad communication passes through this cañon.

In this view the sides of Castle Rock rise up abruptly to its full height, showing the perpendicular face on the left.

No. 59. CARIBOU. A mining-town of some 300 inhabitants, situated high up on the foot-hills, about the headwaters of the Middle Boulder. Its elevation is 9,167 feet, being very near the timber line. It is the scene of considerable mining activity, the hills all about being deeply furrowed with mines and prospect-holes. The Caribou mine, from which the locality takes its name, was sold to a company of foreign capitalists for $3,000,000, and it is said to prove a good investment. There are others in the same neighborhood which are said to be equally promising. The ore occurs in fissures between the gneisses and quartzites.

Nos. 60–62. JAMES PEAK and the range northward, a panoramic view from a high point east of the peak, at an elevation of 12,200 feet, the peak being 13,283 feet above the sea It is on the main divide, which, at this point, turns sharply to the west, describing a great arch around to Gray's Peak and Mount Rosalie. Like the rest of the range, it is of metamorphic rock, gneiss and schist predominating. To the left, in the distance of the first view, is a spur of Parry's Peak, which lies close to Berthoud Pass. In the next view we have a continuation northward, showing a deep, snow-filled valley and numerous lakes, not yet freed from their icy bondage. Leading up to the right is the trail from the South Boulder, over to Middle Park. A wagon-road is in the course of construction, that will afford easy access to the park. This is known as James Pass. In No. 62 the view is due north toward Arapaho, whose square-topped summit looms up in the distance far above the surrounding range; and from it the mountains sweep down in undulating lines to the foot-hills, that appear almost as a rolling prairie.

No. 63. FROZEN LAKE, NEAR FOOT OF JAMES PEAK, the source of Fall River. One of thousands similar, scattered all over the mountain range; small basins filled with the waters from the melting snows, and remaining ice-locked until far into the summer. They will average from two to three acres in extent, and rarely exceeding a half mile in length. In this view we see one of the great snow-fields that remain all summer long, feeding the thousands of little brooks that gather together into the great streams, which water the plains and transform the wilderness into smiling gardens.

No 64. GEORGETOWN. A view from the summit of the trail leading from the valley below to Empire, at an elevation of about one thousand feet above the creek. The town has a population of about 3,000 inhabitants, the outgrowth entirely of the very extensive mining operations carried on in the immediate neighborhood. It lies on Clear Creek, about fifty miles due west from Denver, and at the head of the open valley-

like cañon. Back of the town the stream forks, Leavenworth Mountain standing between, and passes up in rapidly-ascending cañons to the very base of Gray's and Torrey's Peaks. Upon the left is Griffith Mountain, over which a very steep and sinuous trail leads to Idaho Springs and to Chicago Lake. The elevation of Georgetown is 8,412 feet. Being so near the well-known Gray's Peak region of the mountains, it is much frequented by pleasure-seekers and tourists, the railroad from Denver affording easy access.

Nos. 65–70. A PANORAMIC VIEW OF THE FRONT RANGE OF THE ROCKY MOUNTAINS, FROM NEAR GRAY'S AND TORREY'S PEAKS, sweeping the horizon in every direction, and including the 360° in the above six views, which can be joined together as one. The area embraced is about one hundred and fifty miles in diameter, extending from Long's Peak on the north to Pike's in the southeast, to Mount Lincoln in the south, and the Blue River Mountains to the west. The stand-point is upon McClellan Mountain, a spur running northward from Gray's Peak, extending eventually down to Leavenworth Mountain, back of Georgetown. There are several rich mines upon it, at an elevation of 12,000 feet, and upon the summit, in the bare spaces among the snow-drifts, are frequently-occurring stakes, marking some one's "claims." In the first view, No. 65, are the twin peaks, Gray and Torrey, named from the two collaborators in science, who have done so much for their cause, among these mountains. They are very nearly of equal height, Gray being 14,341 feet and Torrey 14,336. From peak to peak the distance is nearly a mile, and through this saddle is a "pass" from Georgetown to the mining-towns on the Blue River. The trail runs up the long ridge toward Gray, and then turns to the right. Its course can be seen by looking sharply where the snow-banks cut across it. The combing crest of snow at the summit frequently lies all summer, and it then becomes necessary to tunnel under it, so that the pack-animals may pass over. To the right of Torrey, away in the distance, across Middle Park, are the Blue River Mountains, their glittering snow-fields alone making them visible.

In the second of the series, No. 66, is a wilderness of snow-streaked mountain summits. In the foreground, looking away down into the valley 2,000 feet below, is the mining-region that once gave Bakerville a name and prominent place in the mining history of the West. No. 67 is very nearly due north, looking down on the spur of Mount McClellan, and directly opposite from Gray's Peak. Beyond, James Peak, and the range about it. In the distance, we can discern away off upon the horizon Long's Peak, and the range running west from it, forming the boundary between North and Middle Parks. Nos. 68 and 69, carry the view around to the east and to the twin peaks, Evans and Rosalie, which lie almost directly between our point of view and Denver. They are detached from the main mountain range and stand out from it to the east, and are consequently the most prominent, as seen from Denver. To the left, in the last view, is a remarkable square-topped mountain, called Table Mountain. Between it and our stand-point is Argentine Pass, over

ERODED SANDSTONES OF MONUMENT PARK.

which a trail has been constructed into the valley of the Blue, via Snake River. The summit of the pass is about 13,100 feet above the sea. No. 70 completes the panorama, and brings us around to where we commenced, the high, prominent point in our view being the summit of Mount McClellan, and connects by a low saddle with Gray and Torrey. McClellan is but a little below Gray, being 13,423 feet high.

No. 71. CHICAGO LAKES. Lying at the foot of Mount Rosalie, the source of Chicago Creek, and the most picturesque mountain lake in Colorado. They are high upon the mountain, just at the verge of timber-line, having an elevation of 11,995 feet, the summit of Rosalie, shown in the view, being 2,345 feet higher. Another lake, of equal size and same characteristics, lies up on the plateau, over which the cascade flows. From the high point on the left a dozen lakelets may be seen scattered about at different elevations in this same vicinity. This lower lake contains many trout, not very large, but most delicious, the water in which they live coming direct from the pure snows above, and retaining an icy coldness all the summer. The lakes are distant from Georgetown and Idaho Springs about sixteen miles, the last five of which are over a very rough trail; but, notwithstanding the difficulties, many travelers visit this place, both for the rare scenery and for a mess of the best trout in the mountains.

Nos. 72, 73. ERODED SANDSTONES IN MONUMENT PARK. Situated upon a small tributary of Monument Creek, about nine miles north of Colorado City. The Denver and Rio Grande Railroad, a narrow-gauge road, running south from Denver, passes across the lower end of the park. The most interesting groups, however, lie back two or three miles from it. For complete description, see Nos. 157–160 of 1870 series.

No. 74. GATEWAY TO THE GARDEN OF THE GODS, about three miles above Colorado City. Two vertical walls of red sandstone, 350 feet in height, the space between them being a perfect gateway. For further description, see No. 365, 1872 series.

No. 75. CATHEDRAL SPIRES, in the Garden of the Gods, just inside the gateway shown in the previous view, tall minarets and spires, needle-like in their perfect symmetry. They are the remnants of the same uplifted strata of red sandstones that form the walls of the gateway. The tallest spire is about 200 feet in height.

Nos. 76–78. A PANORAMIC VIEW OF PIKE'S PEAK, in three sections, with its eastern spurs; from the western edge of the Mesa, lying between the town of Colorado Springs and the Garden of the Gods. In No. 76 we have that portion which extends out to the edge of the plain, a bold promontory-like head-land, known as Cheyenne Mountain, having an elevation of 4,000 feet above the plain. It has many picturesque features, and is sure to engage the attention of the traveler. Along its north face, and extending behind it, are Cheyenne and Bear Cañons, extremely wild and rugged, and picturesque gorges, the first-named having several very fine water-falls and cascades. In the middle distance, about three miles away, is the old town of Colorado City, built in 1859, during the first days of the "Pike's Peak" excitement. Although brushing up and

improving under the influence of the influx of summer tourists, yet it is being overshadowed by more pretentious rivals. The town of Colorado Springs lies about two miles to the east, and Manitou, where the springs are, the same distance west. For description of springs, see No. 154, 1870 series. In the second view we have the intermediate portion of the range, with Cameron's Cone as the prominent point. In the middle distance are some of the upturned strata, which form a portion of the Garden of the Gods.

No. 78. PIKE'S PEAK, as seen looking over the walls of the Garden of the Gods, and distant, in an air-line, about ten miles. Its elevation above the sea is 14,216 feet, and above Colorado City 7,824 feet. It is entirely detached from the main range, lying some seventy-five miles to the east of it. With its spurs, it forms the southeastern boundary of South Park. About two miles beyond the garden, the Fountain qui Bouille flows down through a narrow rugged cañon, known as Ute Pass, over which a road has been constructed into South Park.

The peak offers no great difficulties in the ascent, and lately a good trail has been built to the summit, so that saddle-animals may be used the entire distance.

The Signal-Service Bureau of the United States Army have established a station upon the summit, and the observers have taken up their residence there, isolating themselves completely, for a long and dreary winter.

Nos. 79–84. A PANORAMA IN SIX SECTIONS FROM THE SUMMIT OF MOUNT LINCOLN, situated upon the western extreme of South Park, slightly detached from the main range or the "divide," which here turns abruptly to the west, to Tennessee Pass, and its junction with the Sawatch range. Its elevation, by carefully-computed measurements, is found to be 14,297 feet, very much less than was supposed for a long time. It is the highest point in that spur or continuation of the Park range, which extend as far south as Buffalo Peaks, running parallel to the Sawatch range on the other side of the Arkansas. At its feet, extending eastward, is South Park, comprising some 2,500 square miles in extent, and bounded on the distant horizon by the lofty cone of Pike's Peak. The floor of the park is composed of sedimentary rocks, which have been lifted nearly to the very summit of Mount Lincoln. A section through the mountain, as revealed upon its sides, shows, first, at its base, mica schists, passing up into quartzites. Then comes nearly a thousand feet of limestones, in the upper portion of which occur the richest silver-mines. A thin layer of decomposed sandstone follows, capped by a dike of porphyritic rock, forming the summit of the mountain.

Looking to the south, in No. 79, we see Mount Bross, long famous for its great wealth of silver-bearing rocks. The small buildings near the summit on the left cover the Moose mine, the richest on the mountain. Its whole face has been plowed and furrowed over by the prospector, and is fairly covered sometimes by those seeking new developments of the precious mineral. Across its face two long lines can be traced: the upper, a wagon-road that has been constructed from the valley below to the very summit of Mount Lincoln,

via the low saddle which separates the two mountains. The lower line is the old "trail" that was traveled by hardy little "jacks," laden with supplies for the miners going up, and with sacks of ore going down. Away to the extreme left is a portion of South Park, and in the distance on the right the continuation of the range along its axis to the Buffalo Peaks.

No. 80 is more to the west. The foreground is the continuation from Bross to Lincoln. At the right are the buildings of the Montezuma mine, only one hundred feet below the summit, and the highest mine in the United States. In the distance is the Sawatch range, lying west of the Arkansas. The prominent peaks in the range are Grand, Elbert, La Plata, and Harvard, the highest mountains in the whole Rocky Mountain chain.

In the next view, away in the distance, is a distant view of the mountain of the Holy Cross, (106.) The deep amphitheater at our feet is the head of Montgomery Gulch. Beyond, in the middle distance, lies Tennessee Pass. Around to the north, in No. 82, the prominent point in the view is Quandary Peak, a few feet only below Lincoln. Away in the distance is the Blue River range. No. 83, the fifth in the series, looks down a spur of Lincoln, over Montgomery, 3,500 feet below, on the Platte, so far below as to be out of sight, across Hoosier Pass, a continental divide, the highest point of which is 11,364 feet above the sea, and so into the valley of the Blue. In the distance on the horizon are Gray and Torrey's Peaks. The last view of this series looks east, over South Park, Pike's Peak looming up grandly seventy-five miles away. In the center is Silver Heels, a prominent peak from the park, of 13,897 feet elevation. In the valley below is the Platte River, flowing down through Fairplay, about twelve miles distant. At the foot of the spur of Mount Lincoln, which forms the foreground, is the village of Quartzville, barely discernible, situated just in the upper edge of the forest-growth. A great many miners climb up this peak every day from the town.

Nos. 85–88. THE SAWATCH RANGE, a panoramic view in four sections, embracing about 180 degrees, from a point a little south of Weston's Pass. The elevation of the stand-point is 11,000 feet, or about 2,500 feet above the Arkansas River, just below. No. 85 looks south to Buffalo Peaks, a well-known landmark, occupying the extreme southern end of the Park range. The next is of the Arkansas Valley, extending southward as far as Poncho Pass. In the center is Mount Harvard, the highest in the Rocky Mountains. No. 87 looks west across the Arkansas to the Twin Lakes, about ten miles distant. Beyond them extends the valley or cañon of Lake Creek up to Red Mountain Pass, on the summit of the range. These lakes are in the trough or bed of an old glacier that once filled the valley. On the right is an immense lateral moraine bounding the lake on that side, and on the other is another of less prominence. Upon either side are Elbert and La Plata Peaks, the two next in height to Harvard. In the last view, looking nearly north to Tennessee Pass, at the extreme right, we see in the distance the Mount of the Holy

Cross, and at the left Grand or Massive Mountains, whose height is 14,368 feet. Tennessee Pass is 10,418 feet above sea-level.

No. 89. THE UPPER TWIN LAKE. Lake Creek rises in the heart of the Sawatch range, near Red Mountain Pass, and flowing down a valley of wonderful glacial erosion, empties itself into the Upper Lake, then across a narrow neck which separates them into the Lower Lake. The former is about one and a half miles long, and the last three miles in length, and occupy the trough or bed of an old glacier that once filled this valley. They are well stocked with trout, and, being surrounded by some of the grandest mountain scenery in the Territory, are destined to become a favorite pleasure-resort. A comfortable house of entertainment is already established by the Messrs. Derry, who have boats and other facilities for lake-fishing. (See No. 87.)

No. 90. MOUNT HARVARD. A view looking south on the Arkansas River, from a bluff 1,000 feet high, opposite the mouth of Clear Creek. Mount Harvard, lying in the range west of the Arkansas, and latitude 38°.45, has an elevation of 14,384 feet, the highest in the Rocky Mountains within the limits of the United States. It was named by Prof. J. D. Whitney, who visited this region in 1869, in honor of the well-known seat of learning in New England. In the distance beyond are the spurs of Yale, its summit being obscured by a mass of clouds.

At the base of Harvard is a splendid exhibition of enormous glacial action, in the great lateral moraines that sweep down to the bank of the river.

No. 91. MORAINES ON LA PLATA CREEK. A grand display of great glacial power. Upon either side of the creek are two lateral moraines a half mile apart, three miles in length, and averaging 500 feet in height, as regular as if plowed up by Titans. The granite walls of the cañon above are ground and polished so smoothly as to glisten in the sunlight. Ages past a glacier filled this cañon five hundred to eight hundred feet in depth, and twenty miles in length, discharging itself into the valley of the Arkansas, as shown in this view, leaving these mute witnesses to attest its ancient glory.

All the cañons along this range contain ample evidence of the same tremendous force having been at work upon their walls.

Nos. 92–97. PANORAMIC VIEW OVER THE SUMMITS OF THE SAWATCH RANGE, from the top of La Plata, at an elevation of 14,302 feet. The series is in six sections, embracing the whole horizon. La Plata lies in the center of the range, in the midst of a vast wilderness of mountain peaks, and we look over their summits as over the huge billows of a great sea.

In approaching the mountain we are enabled to ride within 1,500 feet of the summit, the rest of the ascent being easily accomplished on foot, the huge blocks of gneiss, of which the mountain is composed, being so disposed as to afford excellent footing, like a great stairway.

Our first view is a little west of south, along the axis of the range, over a great mass of mountain peaks. In this and the next view to the left, No. 93, are seen the amphitheaters, or

THE UPPER TWIN LAKE, COLORADO.

heads of the cañons, flowing either way, those on the right into the Pacific and those on the left into the Atlantic. In them originated the great glaciers. To the right, in No. 94, we have another glimpse of Mount Harvard, somewhat dimly, as it was obscured by a storm. On the left are the Buffalo Peaks, and a little to the right of them is Pike's Peak, nearly a hundred miles away. In the following view we look down across the mouth of Lake Creek Cañons, on the Arkansas, to the range about Mount Lincoln, in the distance. No. 96 carries the view around to the north. Prominent on the right is Elbert's Peak, named from one of Colorado's governors, and which is 14,324 feet high. Next it, in the distance, are the Grand and Holy Cross Mountains, and on the left the same wilderness of nameless peaks. In the last view of the series, No. 97, the eye follows up Lake Creek to its source, about Red Mountain Pass. Beyond the pass a little way is Grizzly Mountain, so named from the number of bears seen about it, and away in the distance, to its right, are the Elk Mountains; the glistening white face of Snow Mass, with the Capitol and Sopris still farther to the right, being distinguishable.

No. 98. SNOW MASS MOUNTAIN AND ELK LAKE. The Elk Mountains lie west of the Sawatch range, occupying a triangular space, bounded upon two faces by the Grand and Gunnison Rivers, and upon the other by the main range, inclosing an area of about 400 square miles. The center of the range (the peak in our view being one of the highest points) is composed of granitic rocks as a core, about which, upon every side, are tipped up the sedimentary rocks into curiously-castellated mountains, to an almost equal height.

Upon the opposite face of this mountain, as shown in the view, is a similar amphitheater filled with snow, an immense mass, one mile in length by a half mile in breadth, and of great depth. It is this feature that gives it its great prominence, as seen from the east. The lake in the foreground is about one hundred acres in extent, occupying an old glacier-bed. Still nearer is an exposure of glacier-smoothed granite, with a stranded bowlder resting upon it. The height of Snow Mass Mountain is 13,961 feet.

No. 99. MAROON MOUNTAIN, lying a little south of east from Snow Mass, from near which this view was taken. Elevation of stand-point, 12,300 feet. The mountain is entirely of sedimentary rocks, with the exception of a few dikes, lying in well-defined strata of Carboniferous sandstones of a deep rich maroon color, dipping to the north. The long narrow ridge running up to the mountains separates the waters of Rock Creek from those of Roaring Fork. Elevation of Maroon Mountain, 14,000 feet.

No. 100. TREASURE MOUNTAIN, a view looking in an opposite direction, or directly west from the same stand-point, as in the preceding view. It is the most western spur of the Elk Mountain, lying west of Rock Creek. Its broad ridge-like summit has an elevation of about 13,250 feet. About its southern face the industrious prospector has unearthed some very rich silver-ores, and already quite a settlement of miners has collected for the purpose of working them. The mountain was named on account of this wealth which its rocks contain.

No. 101. A VIEW OF THE MOUNTAINS LYING NORTH AND WEST FROM SNOW MASS, one of its peaks showing upon the extreme right. A little to its left is the Capitol, one of the prominent peaks, as seen from the east, and whose elevation is 13,829 feet. The stratified rocks shown in the view have been inverted by some convulsion, and occurred in an inverse order from those near by, in place. Coming down from the snow-fields at the foot of the peaks is Rock Creek, tumbling over the rocks in a most beautiful series of cascades, fully 500 feet in height. Immediately above the Cascades is Elk Lake, (No. 98.) Below, the creek flows down through a very deep gorge, and a still deeper and darker cañon to its junction with the Grande.

Nos. 102–104. A PANORAMIC VIEW OF THE ELK MOUNTAINS, in three sections, from near White Rock Mountains, embracing the southern half of the horizon. The first view is of White Rock, looking west from a long spur or sharp dividing crest which separates two large amphitheaters, one on the right debouching into East River on the north, and the other via Teocalli Creek on the south. This mountain is a portion of the main granitic core, extending northward to the Snow Mass, Capitol, and Sopris, and is so named from a mass of light-colored rock, disintegrating into sand, that breaks out upon its summit. The height of White Rock is 13,847 feet. In the south, as shown in No. 103, is the beautiful pyramidal mountain Teocalli, deriving its name from the Aztec sacrificial pyramid, or *teocalli*. Its upper portion is of beautifully-stratified sandstone, rising by steps and broken into many little sharp pinnacles and towers. It is best seen from the opposite side. (See No. 37 of the following 5 × 8 series.) The third view embraces some of the highest and most conspicuous of the singular sandstone peaks which surround the center of the range. Chief among them is Castle Peak, from the weird towers, by which its central pryamid is flanked on either side. It is a bright, rich red, distinctly banded by its stratification, and rising up in sharp blade-like crests to the summit. Its elevation is 14,106 feet, and that of Teocalli 13,274 feet. This side of Castle Peak are two lesser pyramids, very characteristic of the system, and present their peculiarities more distinctly. Away in extreme distance the broad summit of Grizzly and the sharp crest of La Plata are distinctly seen.

Nos. 105, 106, 107. THE MOUNT OF THE HOLY CROSS, three views, showing first the approaches from a distance, then the cross itself, from a high point immediately opposite; and third, the *Roches moutonnées*, or Sheep-Backed Rocks, shown in the valley of the first view.

The following extracts from a letter, by Prof. W. D. Whitney, of Yale College, who accompanied the party to the summit of the mount, describes the series perfectly, and some of the difficulties encountered in securing the views:

MONDAY, August 24th.—The Mount of the Holy Cross has been thoroughly done at last, but at a cost of time and labor which was not at all anticipated. It may be only after years, if at all, that another party will try to repeat the ascent; still, some brief recital of our experience may not be without its value.

There is a broad valley, carrying a very heavy creek, which runs directly down from the main peak, a little east of north, to nearly the site

of the camp at which my letter was begun. This valley was formerly the bed of a glacier, and its bottoms and its sides, up to a thousand feet or more above the bottom, are rounded and scored by the action of the ice. Perhaps there is not in our whole country such an exhibition of what the French call *roches moutonnées*, or "sheep-backed rocks," that look in the distance, namely, like a flock of enormous sheep lying down in a pasture. As an example of this particular kind of glacial action, our trip certainly has furnished nothing to compare with it, even distantly. Take such a valley, with the sheep-backs rising anywhere from ten to fifty feet over it, or broken ridges that afford no continuous pathway, and with the interstices filled with fallen timber, and you will readily perceive that traveling in it is no pastime; yet all attempts to scale the mountain must stand in some relation to this valley, and that although the ridge on neither side reaches the peak without a deep hollow intervening.

Well, our attempt was made up the western ridge. It was not hard to ascend from the creek-valley to the edge of the ridge, but there the fallen timber grew worse and worse, and twice the train was turned back, on both arms of the ridge, and had to camp at evening at hardly two hours' distance from the starting-point. A lighter party next day, well armed with axes, cut their way through, and reached first a high point at the edge of the ridge, 1,350 feet above the valley, and commanding a splendid view both of it, with its glacial phenomena, and of the peak beyond; how splendid, Mr. Jackson's photographs, taken from the spot, will by and by show. Two courses were now open: one, to plunge into the valley and work up it as far as possible below; the other, to labor along the edge to a point nearly opposite the peak, and try to get down there. It was, perhaps, one of those cases where, whichever alternative one takes, he will be sorry not to have taken the other; at any rate, we took, after careful consideration, the first, and would advise any other party by all means to try the second, which is probably practicable. For the plunge was a long and severe one, and, with our utmost efforts, we could get but a mile up through the valley, leaving two hours and a half of hard scrambling between our final camp and the bottom of the peak, with the heavy geodetic and photographic apparatus to carry. Nor was the food for the animals sufficiently abundant and nutritious below.

Next day, setting out soon after daybreak, the ascent was attempted by two parties; the photographic climbing to the end of the southern ridge, as being 500 feet lower, and otherwise more easily accessible, and as including the peak itself in the panorama. Unfortunately, the weather was not propitious. A showery afternoon the day before had ended in a rainy night; and though the clouds broke in the morning, yet the flying mist hung about the high summits all day long, obscuring the view. Both parties were compelled, instead of returning to camp, to do the best they could at timber-line, with no wraps, and only the lunch they had taken in their pockets, and to finish their work on the following morning. Fortunately the night was neither windy nor cold; but thirty hours on no provisions but a pocket-lunch are pretty hard upon men, some of whom have done 5,000 feet of climbing with thirty or forty pounds of instruments on their backs.

The following day was a fine one here, although the horizon was much obscured by flying storms, and Mr. Gardner was able to sight his points, and Mr. Jackson to make his panoramic views in time to return to camp in fair season. One of the photographs in particular shows finely the cross that gives name to the peak. Its cause lies in the cross-seams of the gneiss, which cut one another on that face at nearly a right angle,

one of the horizontal ones happening to be broken out to such a depth as allows the snow to lie along in it.

The mountain itself, like the whole of the range to which it belongs, is of primitive rock, gneiss; the sedimentary beds cap some of its flanking hills, and abound over toward the Elk Mountains, as well as in the valley which lies this side of the Blue River range, but they do not appear anywhere near the summit. It is not precisely in the main range, but rather constitutes a side branch, or spur striking off to the northwest, and is the most northern spur of the Sawatch range. Nearly its entire drainage flows into Eagle River, or the Piney, as it is sometimes called, and so into the Grand. The height of the mount is 14,176 feet above tide-water, and that of the left-hand peak, in No. 105, from which the view of the cross, No. 106, was made, about 300 feet lower. The perpendicular arm of the cross is 1,500 feet in length and fully 50 feet in breadth, the snow lying in the crevice from 50 to 100 feet in depth. The horizontal arm varies with the seasons in length, but averages 700 feet.

(Negatives 5 × 8.)

Nos. 1–3. RENDEZVOUS CAMP, on Clear Creek, four miles northwest from Denver, a delightful spot, in the midst of a grove of cottonwoods, with great wide-spreading arms, resembling the eastern elm. The views are made in early spring, before the trees put forth their leaves. In this camp the members of the survey collected to organize and equip for the season's campaign.

Nos. 4, 5. LONG'S PEAK, from lower end of Estes Park.

No. 6. LONG'S PEAK, from Prospect Mountain.

No. 7. MOUNT LINCOLN, from Hoosier Pass, looking across Montgomery Gulch, to the cap-like summit. (See Nos. 79–84, 11 × 14 series.)

Nos. 8–12. PANORAMA FROM SUMMIT OF MOUNT LINCOLN. (See 11 × 14 series.)

No. 13. HEAD OF MONTGOMERY GULCH, as seen from near Hoosier Pass, showing that portion of the range which connects Lincoln with Quandary.

No. 14. HEAD OF BUCKSKIN GULCH. About it are many silver-mines that are profitably worked. Buckskin Creek is a small tributary of Clear Creek, draining the southern face of Bross and Lincoln.

No. 15. THE NORTH OR RIGHT HAND WALL OF BUCKSKIN GULCH, and the foot of Mount Bross, showing, in a well-defined section, the contact of the quartzites with the gneissic rocks below, and the limestones above.

No. 16. HEAD OF MOSQUITO GULCH, lying next south to Buckskin, from a high point looking down into the amphitheater, and up to the crest of the divide which separates the waters of Platte and the Arkansas. To the left of the mountain butte, in the center, is Mosquito Pass, a trail only, leading over to Oro City and California Gulch. The elevation at the summit of the pass is 12,200 feet.

No. 17. HEAD OF SACRAMENTO GULCH, lying next south of Mosquito. From the same stand-point as the preceding. Prominent in the view are the long slopes of quartzites, which break down suddenly and leave the great basin or amphitheater between it and the granites of the main range.

TROCALLI MOUNTAIN.

No. 18. HORSESHOE MOUNTAIN, southeast from Fairplay about ten miles, and in the same range with the preceding views. An amphitheater in an uplifted limestone strata, resembling very much the impression left by a horse's foot, upon a gigantic scale, in the side of the mountain. The floor of the amphitheater is composed of granite, the quartzites and limestones resting upon it. There are some very rich silver-mines about the mountain, lying in the stratified rocks high up on the mountain elevation.

No. 19. LOOKING NORTH FROM NEAR HORSESHOE MOUNTAIN, to Bross and Lincoln, and across Sacramento, Mosquito, and Buckskin Gulches.

No. 20. MORAINE ON THE SOUTH SIDE OF LA PLATA CREEK, at its junction with the Arkansas. (See No. 91 of 11 × 14 series.)

No 21. VIEW OF THE ARKANSAS RIVER, between the La Plata Creek and Twin Lakes, where the stream is narrowed down to a foaming cascade or fall, and flanked by great towering walls of granite.

No. 22. THE TWIN LAKES, a distant view, as seen from an elevation of 800 feet above them, on one of the spurs of Mount Elbert. For description, see No. 89 of previous series.

No. 23. THE UPPER TWIN LAKE.

Nos. 24–26. THE TWIN LAKES, a panoramic view, in three sections. Same as No. 22.

No. 27. NATURAL BRIDGE, on Twin Lake Creek, three miles above the lake, formed by a great granite bowlder becoming stranded and suspended over a deep, gorge-like crevice, under which flows the creek. It is the result of glacial action.

No. 28. FALLS ON TWIN LAKE CREEK, in the same crevice over which hangs the suspended bowlder mentioned in the preceding number, this view being made from above, looking down into it, the falls and the bridge being separated only a few yards.

No. 29. A GRANITE BUTTRESS, 500 feet in height, standing out midway in Lake Creek Valley, the upper face of which has been rounded off and polished by glacial action.

Nos. 30–34. PANORAMA FROM SUMMIT OF LA PLATA MOUNTAIN. (See Nos. 92–97 of 11 × 14 series.

No. 35. AMPHITHEATER ON WESTERN FACE OF SAWATCH RANGE, as seen from Red Mountain Pass. It lies at the head of a cañon emptying into Taylor River, a tributary of the Gunnison, about the mouth of which is an extensive series of lateral and terminal moraines. Elevation of pass, 11,841 feet.

No. 36. RED ROCK FALLS, upon a small tributary of East River, among the Elk Mountains. The sandstones over which they flow are Carboniferous, broken up into picturesque, castellated forms, and of a dark, almost maroon red.

No. 37. TEOCALLI, from the Aztec *teocalli*, or sacrificial mound, that were always built in a pyramidal form, and which this mountain closely resembles. Is situated upon a small tributary of Red Rock Creek, flowing into East River. Its height is 13,274 feet. (See No. 103 of previous series.)

No. 33. GOTHIC MOUNTAIN, East River, a bold, picturesque mountain form, as well as a most instructive geological picture. The base of the mountain is Cretaceous; then comes a broad, deep band of eruptive rock, covered with the Cretaceous, which is again surmounted with the volcanic material forming its summit. Elevation, 12,498 feet.

No. 39. WHITE ROCK MOUNTAIN, a portion of the granitic core of the Elk Mountain, lying some six or eight miles east of Gothic Mountain. (See No. 102 of 11×14 series.)
No. 40. EAST RIVER PASS, looking across the head of East River and the pass that reaches the head of Rock Creek.
No. 41. VIEW DOWN EAST RIVER, from the pass, showing Gothic Mountain and Crested Butte in the distance.
No. 42. A SPUR OF THE ELK MOUNTAINS, lying near the head of East River, showing granitic eruption, with sedimentary beds lying up on either flank.
No. 43. LOOKING SOUTH ACROSS ROCK CREEK, toward the Snow Mass and Capitol. (Same as No. 101 of previous series.)
No. 44. TREASURE MOUNTAIN, and view down the cañon of Rock Creek, toward the Grand.
No. 45. VIEW SOUTH, ACROSS EAST RIVER PASS.
No. 46. ELK LAKE AND SNOW MASS MOUNTAIN.
No. 47. ELK LAKE, shadow view.
No. 48. TREASURE MOUNTAIN.
No. 49. SNOW MASS MOUNTAIN, from the south, showing a portion of the snow-field, from which it derives its name.
No. 50. CASCADES ON ROCK CREEK, tumbling down the rocks a height of 500 feet, from Elk Lake, which lies in a large amphitheater above.
No. 51. A PICTURESQUE FALL upon the right-hand branch of Rock Creek, flowing over almost coal-black shales, and running diagonally through them, under the falls, is a very distinctly marked trachytic dike.
No. 52. FALLS ON ROCK CREEK, a few rods above the former.
No. 53. ORO CITY, California Gulch, on the western slope of the Park range, and directly opposite the view shown in Nos. 16 and 17 of this series. It is a mining town, pure and simple.
No. 54. GRAND OR MASSIVE MOUNTAIN, from near mouth of California Gulch.
No. 55. ARKANSAS VALLEY, looking south, connecting with the previous view from same stand-point, showing Mount Elbert on the right, then La Plata and Harvard.
No. 56. A BLUFF OF PALEOZOIC SANDSTONES, 1,500 feet in height, on Eagle River, opposite mouth of Roche Moutonnée Creek.
Nos. 57, 58. ROCHES MOUTONNÉES, near foot of the Mount of the Holy Cross, the first looking up and the other down the valley.
No. 59. DISTANT VIEW OF THE MOUNT OF THE HOLY CROSS and Roche Moutonnée Valley.
No. 60. MOUNT OF THE HOLY CROSS.
Nos. 61–64. PANORAMA, from near the Mount of the Holy Cross.

STEREOSCOPIC VIEWS.

Nos. 640, 641. LONG'S PEAK, from Estes Park.
Nos. 642, 643. ESTES PARK.
No. 644. LONG'S PEAK, from Prospect Mountain, Estes Park.
No. 645. LONG'S PEAK AND LILLY LAKE.
No. 646. LONG'S PEAK, from near head of Little Thompson River.
No. 647. LONG'S PEAK from southeastern base, head of the Saint Vrain.
Nos. 648, 649. THE COLORADO OR FRONT RANGE, from Bald Mountain, near Gold Hill.
No. 650. CASTLE ROCK, Boulder Cañon.

Nos. 651, 652. VIEW IN BOULDER CAÑON, near Castle Rock.
No. 653. ROADWAY UNDER CASTLE ROCK.
No. 654. BOULDER CAÑON, looking up from Castle Rock.
Nos. 655, 656. IN THE SNOW, 15th of June.
No. 657. GEORGETOWN, COLO.; view from trail leading to Empire.
No. 658. VIEW DOWN CLEAR CREEK, from Empire trail.
No. 659. VIEW looking down Empire and Georgetown trail.
No. 660. GRAY'S PEAK.
No. 661. TORREY'S PEAK.
No. 662. LOOKING DOWN CLEAR CREEK from near Gray's Peak.
No. 663. MOUNTS ROSALIE AND EVANS, from near Gray's Peak.
No. 664. JAMES PEAK.
No. 665. PARRY'S PEAK.
Nos. 666, 667. FROZEN LAKE, near James Peak, June 15.
Nos. 668–674. CHICAGO LAKES, Mount Rosalie.
Nos. 675–678. ERODED SANDSTONES OF MONUMENT PARK, near Colorado Springs.
Nos. 679–681. GATEWAY OF THE GARDEN OF THE GODS, near Pike's Peak.
Nos. 682, 683. CATHEDRAL SPIRES, Garden of the Gods.
No. 684. PIKE'S PEAK, from the Garden.
No. 685. UTE PASS, from Colorado Springs to South Park.
No. 686. UTE FALLS, in Ute Pass.
No. 687. MOUNT LINCOLN, from Hoosier Pass.
No. 688. HEAD OF MONTGOMERY GULCH.
No. 689. HEAD OF BUCKSKIN GULCH.
No. 690. VIEW IN BUCKSKIN.
No. 691. HEAD OF MOSQUITO GULCH.
No. 692. HORSESHOE MOUNTAIN, from below.
No. 693. HORSESHOE MOUNTAIN, from above.
No. 694. ORO CITY AND CALIFORNIA GULCH.
No. 695. MOUNT HARVARD, and view down Arkansas River.
No. 696. FALLS ON THE ARKANSAS.
No. 697. CASCADES IN THE CAÑON OF LA PLATA CREEK.
No. 698. RED ROCK FALLS, Elk Mountains.
No. 699. UPPER TWIN LAKE, near view.
No. 700. LOWER TWIN LAKE, distant view.
No. 701. UPPER TWIN LAKE, distant view.
No. 702. FALLS ON LAKE CREEK.
No. 703. NATURAL BRIDGE OVER LAKE CREEK, near the falls, and three miles above Upper Lake.
No. 704. TEOCALLI, Elk Mountains.
No. 705. ELK LAKE AND SNOW MASS, shadow view.
No. 706. ELK LAKE AND SNOW MASS MOUNTAIN.
No. 707. TREASURE MOUNTAIN, from near Snow Mass.
Nos. 708, 709. SNOW MASS MOUNTAIN, from the south.
No. 710. MAROON MOUNTAIN.
No. 711. CASCADES on the Left Fork of Rock Crek.
Nos. 712, 713. LOWER FALLS on the Right Fork of Rock Creek.
No. 714. UPPER FALLS on the Right Fork of Rock Creek.
No. 715. DISTANT VIEW OF THE MOUNT OF THE HOLY CROSS.
Nos. 716, 717. ROCHES MOUTONNÉES.
No. 718. THE MOUNT OF THE HOLY CROSS.

1874 SERIES.

(Negatives 5 × 8.)

COLORADO.—Middle Park, *via* Berthoud Pass; thence to San Juan mining-region, *via* the Blue River, Hoosier Pass, and the Rio Grande, including all points of interest in Antelope and Boker's Park, and about the head of the San Miguel. The La Plata Mountains and the remarkable prehistoric ruins in the cañon of the Mancos and about El Late, taking in, finally, on the way back, the Monument Rocks, between Colorado City and Denver.

No. 65. BERTHOUD PASS, looking north. Height of pass, 11,313 feet. View made from point 800 feet above lowest point of pass. James' Peak, with an elevation of 13,283 feet, is near the center, while away in the distance on the left is the group around Arapahoe Peak.

No. 66. BERTHOUD PASS, looking south, up toward the head of Clear Creek, whence Viele's Pass crosses the range to Middle Park.

No. 67. GRAND LAKE, near the head of the Grand River and about ten miles west of Long's Peak. It is a clear, cold, deep sheet of water, about two and a half by one and a half miles in extent and abounding in trout. In the distance is Round Mountain, from the base of which to the lake, a distance of about five miles, is one of the grandest exhibitions of glacial scouring to be seen in the Rocky Mountains.

No. 68. FISHERMAN'S CABIN, on Grand Lake, the residence of a hermit fisherman, situated near the outlet of the lake.

Nos. 69, 70, 71. WEST FROM FOOT OF ROUND MOUNTAIN, looking down the valley of Roches Moutonnées to Grand Lake in the distance. This valley was once the seat of immense glaciers, which wore down and polished all the granite ridges that are seen glistening in the sunlight throughout its entire length.

Nos. 72, 73. FALLS AT THE FOOT OF ROUND MOUNTAIN. The Grand River is here but a brawling brook, falling down the mountain in continued series of cascades and falls, one of which, of about 50 feet fall, is shown in the view.

No. 74. HOT SPRINGS, MIDDLE PARK, at the foot of Mount Bross, on the north bank of Grand River. The temperature of the springs ranges from 109 to 116 degrees; the water contains sulphur, iron, magnesia, and other mineral properties, said to possess remarkable curative powers. Elevation of springs, 7,725 feet.

Nos. 75, 76. LOOKING UP GRAND RIVER FROM THE HOT SPRINGS, Middle Park, over the site of the prospective county-seat of Grand County, to be known as Grand City, some of the buildings of which are to be seen at the right of view No. 76.

Nos. 77, 78, 81. VIEW DOWN THE GRAND RIVER, from near the Hot Springs. The river here cuts through a mountain of solid granite to a depth of 1,500 feet, and for a distance of about three miles.

No. 79. EAST FROM NEAR THE SUMMIT OF MOUNT BROSS, back of the Hot Springs in Middle Park, looking up Grand River to mountains in the dim distance about Long's Peak.

No. 80. WEST FROM NEAR THE SUMMIT OF MOUNT BROSS, Middle Park, looking down the Grand River through its first deep cañon to the Blue River Mountains in the distance. This view looks over the springs and town-site and the trails leading west down each side of the cañon.

No. 82. VIEW IN MIDDLE PARK, EAST FROM THE MOUTH OF BLUE RIVER, looking up the broad, fertile valleys and graceful curves of the Grand River.

No. 83. VIEW UP THE BLUE RIVER, from its intersection with the Grand in Middle Park. In the distance are the Blue River Mountains, the highest point of which, on the right, is Mount Powell, 13,398 feet high.

Nos. 84, 85. NORTH ACROSS THE GRAND RIVER, from the mouth of the Blue River, Middle Park, showing in the middle distance of peculiar mesa of carboniferous limestone.

No. 86. VIEW DOWN THE GRAND RIVER from the mouth of the Blue River, showing Gore's Cañon in the distance.

Nos. 87, 88. GORE'S CAÑON. View near its mouth, looking down. The Grand River here makes its first entry of the cañon, flowing quietly and smoothly through the upturned beds of sandstone that lie up against the more massive rocks of the cañon proper.

Nos. 89, 90. GORE'S CAÑON. Grand River, through the northern end of the Blue River Mountains; the walls, of solid granite, rise two and three thousand feet nearly vertically above the river, which rushes through in a series of foaming, dashing rapids.

Nos. 91, 92. VIEW OF THE BLUE RIVER, from near Ute Peak, and from an elevation of over 1,000 feet above the river. On the right, in the distance, are the spurs of the Blue River Mountains, nearly obscured by storm-clouds.

No. 93. VIEW WEST ACROSS THE BLUE RIVER, from the side of Ute Peak.

No. 94. LONE ROCK, at the entrance to Pleasant Park, a region covered with fantastically-shaped red sandstones, about forty miles south of Denver, and lying just outside the Front range.

Nos. 95, 96. PLEASANT PARK. A group of rocks bearing resemblance to a ruined, fortified city.

No. 97. PLEASANT PARK, looking west over a group of the sandstones to the granitic Front range.

No. 98. PLEASANT PARK, general view, looking south toward Lone Rock.

Nos. 99, 100. PROFILE ROCKS, in Pleasant Park.

Nos. 101, 102. TABLE-LANDS near the Colorado Divide, fifty miles south of Denver; elevated plateaus of sandstone lying horizontally and capped with basalt. They average 800 feet above the valley.

Nos. 103, 104. LAKE ON THE COLORADO DIVIDE, looking north, a small body, balanced, as it were, on the divide, at an elevation of 7,208 feet, its drainage equally divided between the Arkansas and the Platte.

No. 105. VIEW SOUTH FROM COLORADO DIVIDE, down Monument Creek. The view is too extended to admit of much definition in the detail.

Nos. 106, 107. VIEWS, showing the contact and bending up of the Triassic beds against the granites.

Nos. 108, 109. VIEWS, showing a peculiar conglomerate made up of large angular masses of granite. West bank of Monument Creek was the divide.

No. 110. SOLITARY BUTTE of sandstone, in the valley of Monument Creek.

Nos. 111, 112. NATURAL ARCH, under the Citadel Rock in the Colorado Divide.

Nos. 113–117. MONUMENT PARK. Various studies among the fantastic monuments, that are fully described in the 1873 series.

No. 118. CASTELLATED ROCKS, near Monument Park; delicately tinted, creamy-white sandstone, weathering into horizontal lines, presenting, from a distance especially, quite a castellated appearance.

No. 119. CASTELLATED TOWER, 100 feet in height, of the same creamy-white sandstone as 118.

No. 120. STUDY of picturesque pine and castellated rocks, with sun shining through the branches of the tree.

No. 121. SAN LUIS VALLEY AND LAKE, with the Sierra Blanca in the distance. San Luis Valley is an immense arid plain, with the exception of the country bordering the few streams from the mountains and two or three stagnant lakes, of which the view is one, that are formed by them. It is 50 by 150 miles in extent, and supports vast herds of cattle and flocks of sheep along its eastern edge. The highest peak of the Sierra Blanca, as seen in the distance, is 14,400 feet.

No. 122. THE RIO GRANDE, a view about one mile below Wagon-Wheel Gap, a wild, picturesque gorge, where the river has forced its way through a volcanic ridge, two to three thousand feet in height.

No. 123. WAGON-WHEEL GAP, showing the nearly columnar stratification of the basaltic bluffs bordering the stream, which, despite the rugged character of its surroundings, flows calmly and quietly under the overhanging bluffs.

No. 124. ANTELOPE PARK, in the valley of the Rio Grande, a general view, looking down from upper end of park. It is merely an expansion of the valley of the river. It is noted as a fine fishing resort and for the excellence of its pasturage, although its elevation, 9,000 feet, is too great to admit of out-door wintering.

Nos. 125, 126. BRISTOL HEAD, Antelope Park. A prominent headland of basaltic material jutting out on the lower end of the park. It is so called by some English residents of the park, as suggesting a resemblance to their native landmark.

Nos. 127, 128. LAKE SANTA MARIA, under Bristol Head, Antelope Park, an extremely beautiful sheet of water, about one and a half miles in length, and occupying a drainless pocket at the foot of the bluff. It is a favorite resort for all the game of the region, ducks, geese, and antelopes being found in considerable numbers.

No. 129. TRACHYTIC BLUFFS, on the Rio Grande, at the mouth of Lost Trail Creek. The trachyte is exposed over a considerable portion of the mountains, and is particularly noticeable in being banded into bright tints of green, blue, violet, and yellow.

No. 130. THE RIO GRANDE, at Lost Trail Creek. The stream has become so divided among its many tributaries that it is here

CLIFF-HOUSE IN THE CAÑON OF THE MANCOS.

hardly more than a mountain brook. Near by is Jennison's, or Carr's Cabin, a favorite stopping-place before crossing the range into Baker's Park. The elevation here is 9,600 feet.

No. 131. THE RIO GRANDE, near Carr's Cabin, looking up to the summit of the range. Five miles above is Pole Creek, where the road turns well to the right to cross the divide.

No. 132. CAÑON OF THE RIO GRANDE, at Biver Rend, a short distance below Carr's Cabin.

Nos. 133, 134, 135. VIEW ON THE WHITE EARTH RIVER, where the trail from Los Pinos to Antelope Park crosses the White Earth; is a handsome little pocket of a valley, surrounded by high walls of the variously-colored trachytes, characteristic of this region. The river cañons deeply, both in entering and leaving this valley.

No. 136. BAKER'S PARK, looking south from a point on Galena Mountain, about 1,000 feet above Howardville. Immediately below is the town, 9,700 feet in altitude. In the distance is Sultan Mountain, 13,366 feet high, about six miles distant. On the left are the spurs of King Solomon and Kendall Mountains, and on the right those of Tower Mountain. The park proper is five miles below, but the name is generally applied to that portion of the valley of the Rio las Animas lying between Sultan Mountain and the Eureka Gulch, three miles above Howardsville. Baker's Park is the center of the famous San Juan mining-region.

No. 137. BAKER'S PARK. A view looking down from the mouth of Arrastra Gulch. The Animas is here closely confined between high walls of dark volcanic rocks, that are weathered into many fantastic pinnacles.

No. 138. ARRASTRA GULCH, looking up from across the Animas, which is here sunk far out of sight, in the gorge running across the foreground of the ravine. The wrecks of the old arrastras, that were put in some twelve or fourteen years ago, in Baker's time, have given the gulch its name. It was also worked in that time for gold in placers, but with no success. It is now more favorably known through its silver-mines, which are among the richest of this region.

No. 139. TOWER MOUNTAIN, opposite Howardsville. Upon its nearly-perpendicular face of 3,000 feet are exposed a number of quartz-veins, traversing its whole length. The one cutting down diagonally from the left is the Mammoth lode. Most of the others are claimed as mineral-bearing veins.

No. 140. BAKER'S PARK, as seen from the summit of Sultan Mountain, nearly 4,000 feet above it. In the distance are the Uncompagre Mountains. The Animas rises near them, and, coming south, receives Cunningham Creek from the right, as seen in the view, and then, nearer the foreground, from the left, Cement and Mineral Creeks, the main stream turning sharply to the right, where it enters the famous cañon of the Animas.

Nos. 141, 142, 143, 144. A PANORAMIC VIEW FROM SULTAN MOUNTAIN. The above four numbers, with No. 140, sweep the entire horizon from the center of the San Juan Mountains, the most rugged mass of mountain-peaks of the whole Rocky Mountain range. The first of the above series looks northwesterly into the mass of high peaks about the heads of Mineral and Cement Creeks; a solid mass of volcanic over-

flow, with just a slight outcropping of sedimentary rock in lower left-hand corner. The next view, nearly south, shows quite an extended surface of the sand and lime stones capped with trachyte. No. 143 carries the view around to the south east, where the mountains gradually fall away to the Animas Valley, forty miles below. No. 144 looks into a great mass of needle-like quartzite peaks, of great height, lying on the east side of the Animas. The most prominent peaks of the group are upward of 14,000 feet in height, and most of them perfectly inaccessible.

Nos. 145, 146, 147. PANORAMC VIEWS FROM SULTAN MOUNTAIN, looking west to the head of Mineral Creek, south toward Animas Valley, and east into the quartzite group east of the Animas River. Made with a lens of greater focal length, these views embrace a much less width of angle than the preceding series, but bring up the detail to a much bolder scale.

Nos. 148, 149. VIEWS ABOVE TIMBER-LINE, at the source of one of the main tributaries of Mineral Creek, showing the snow-fed lakelets, so numerous among the higher snow-clad peaks and sharply-serrated crests shown in Nos. 141 and 145, station 30. The Broad Mountain, on the right hand, in No. 149, is 13,897 feet high.

Nos. 150 to 153. SAN MIGUEL LAKE. The Rio San Miguel is one of the lower tributaries of the Gunnison River, rising in the heart of the San Juan Mountains, from which as a center radiate all the principal streams of the Southwest. One view shows the very source of the river in Bear Creek Pass, opposite the head of Current Creek, one of the principal tributaries of the Animas. The lake is small, not more than a mile in length, and well filled with fine trout. It occupies a little valley at the foot of the mountains, at an elevation of 9,720 feet above the sea. Bear Creek Pass, the depression in the center of the view, is 12,600 feet high. The sharp peak on the left is station 30, 13,897 feet altitude. The four pictures of this view differ only in cloud effect.

No. 154. VIEW SOUTH FROM THE SIERRA LA PLATA. The La Plata Mountains are a group by themselves, some distance to the south of the San Juan Peaks, and are coming into general notice from the great mineral wealth contained within them. Our view is from a point on the west bank of the Rio La Plata, and some 3,000 feet above it. The stream can be seen in the dim distance, meandering away to the plain of the San Juan River. The horizon extends over into New Mexico.

No. 155. THE SIERRA LA PLATA. A view looking up into the heart of the principal group of peaks, prominent among which is Mount Babcock, so named from a California gentleman prominently connected with the mining-interests of this region. Elevation of highest point, 14,000 feet.

ANCIENT RUINS IN SOUTWESTERN COLORADO.

Between the Sierra La Plata and the Rio San Juan lies an elevated plateau, known as the *Mesa Verde*, through which the Rio de los Mancos has cut a cañon some twenty-five miles in length. Throughout this cañon a pre-historic people have left

WATCH-TOWER, IN THE CAÑON OF THE MCELMO.

traces of their former occupancy of this region in curiously-constructed houses of hewn stone, built in the crevices of the walls of the cañon, in some cases 800 to 1,000 feet above the valley. Most of these dwellings are now in ruins, but enough are preserved to enable us to study them with great satisfaction. West of the *Mesa Verde* is a low volcanic cone, known locally as Ute Peak, but upon the maps is put down as El Late, about which are extensive and very interesting architectural remains. The investigation of them extended down the northern and western drainage of this peak some distance into Utah. For a more extended and detailed description, see the bulletins of this survey devoted to the subject, viz: The Pre-historic Remains of the Southwest.

No. 156. CLIFF HOUSE IN MANCOS CAÑON, a two-story house of hewn stone, built in a narrow crevice of the sandstone mesa 800 feet above the valley at its feet. It is in a fair state of preservation, the overhanging rock protecting it from the weather. The ground-floor shows a front room about 6 by 9 feet square, and back of it two smaller ones. The stories were a little less than 6 feet in height; the flooring which formerly separated them has decayed or been removed. Inside, the walls of the front rooms of each floor have been plastered with a fine adobic cement, painted red and banded with white, giving them quite a finished appearance. In front a sort of esplanade has been cleaned out from the rock, some 20 feet long and 10 broad, the only level spot about the place.

No. 157. CLIFF-HOUSE IN MANCOS CAÑON, built upon an extension of the same ledge as the building mentioned in No. 156. It is very much smaller than that one, but shows excellently the inaccessibility of its site and its great height above the valley.

No. 158. REMAINS OF A GREAT TOWN in the cañon of the Mancos, consisting of two circular walls, the inner with an inside diameter of 25 feet, and then a space of 5 feet between that and the outer wall, divided into six equal apartments. A portion of the outside walls still remains, some 15 feet in height.

No. 159. A PORTION OF THE WALLS OF MANCOS CAÑON, nearly 1,000 feet in height, near the summit of which, in the space between the strata, are sandwiched some of the curiously-constructed cliff-houses, access to them being attainable only by an extremely hazardous route from over the summit of the bluff above there.

No. 160. A GENERAL VIEW OF THE CAÑON OF THE MANCOS near its entrance to the valley of the San Juan. The bluffs on either side are from 1,000 to 1,200 feet in height, and in crevices near their summits are built the curious cliff-houses of this series.

Nos. 161, 162. REMARKABLE RUINS AT AZTEC SPRINGS, at the foot of the eastern face of Ute Peak, consisting of two immense stone structures, as shown in each view, respectively, while about them extends a series of subdivided inclosures, indicated by heavy stone-walls for about a half mile in either direction.

No. 163. RUINS ABOUT THE HEAD OF THE MCELMO CAÑON, near Ute Peak. In the center of an indistinguishable mass of ruins is

a central circular tower some 30 feet in diameter, consisting of three walls within one another, the space between the two outer ones being subdivided into many smaller apartments similar to the Mancos Tower.

Nos. 164, 165. BATTLE ROCK, ON THE MCELMO. Front and rear view of a detached remnant of the surrounding mesas, which is covered with the ruins of walls, houses, and towns. A tradition of the neighboring Indians points it out as being the last stronghold of the builders before being finally expelled by their conquerors.

Nos. 166, 167. CAVE DWELLINGS. Half a mile back of Battle Rock is a prominent bluff, in the face of which many caves have been weathered out by atmospheric influences. These have been utilized by the builders of that age simply by walling up the mouth of the cave, leaving a spacious room within.

No. 168. WATCH-TOWER ON THE MANCOS. This is a circular tower, 10 feet in diameter, built upon a rock some 12 feet in height, with perfectly smooth perpendicular faces, rendering the superstructure inaccessible except by ladder. Occupying a bench half-way up the side of the cañon, it commands an old deeply-worn trail winding up past it to the plateau above.

Nos. 169 to 172. THE HOVENWEEP CASTLE. A ruined town on the Hovenweep, a tributary of the San Juan lying just within Colorado, occupying a prominent rocky bluff overlooking the usually dry bed of the creek. It consisted of a solid mass of small houses not more than about 6 by 8 feet in diameter, arranged in a semicircle, the convex side flush with the edge of the rocky bluff, and inaccessible, while the concave side, which was depressed like an amphitheater, was occupied by much lower and less important buildings, now almost unrecognizable. The most prominent of the buildings showing in the view are solidly constructed of well-dressed stone, and, notwithstanding their exposed situations, are well preserved.

Nos. 173 to 239. CAMP-STUDIES; are a miscellaneous collection of views of the camp and its *personnel*, showing fully the interior working of the survey while in the field.

STEREOSCOPIC VIEWS.

No. 720. BERTHOUD PASS, north.
Nos. 721, 722. BERTHOUD PASS, south.
No. 723. BERTHOUD PASS, southeast.
Nos. 724, 725. GRAND LAKE, Middle Park.
No. 726. FISHERMAN'S CABIN, Grand Lake.
No. 727. FALLS ABOVE GRAND LAKE.
No. 728. HOT SPRINGS, Middle Park.
No. 729. VIEW WEST FROM HOT SPRINGS.
No. 730. VIEW EAST FROM HOT SPRINGS.
No. 731. VIEW UP THE GRAND FROM THE MOUTH OF THE BLUE.
No. 732. VIEW UP THE BLUE FROM THE GRAND.
No. 733. VIEW UP THE MUDDY FROM THE GRAND.
Nos. 734, 735. GORE'S CAÑON, upper end.
Nos. 736, 737. GORE'S CAÑON, view within.
Nos. 738, 739. VIEWS ON THE BLUE NEAR MOUNT POWELL, looking up.
Nos. 740, 741. VIEWS ON THE BLUE, looking west across the river.
No. 742. VIEW DOWN THE BLUE FROM NEAR UTE PEAK.

RUINS IN THE CAÑON OF THE HOVENWEEP, UTAH.

Nos. 743–745. VIEWS AMONG THE ROCKS OF PLEASANT PARK.
No. 746. PROFILE ROCKS, Pleasant Park.
Nos. 747, 748. THE LIBERTY CAP, Pleasant Park.
Nos. 749, 750. TABLE-LANDS ON COLORADO DIVIDE.
No. 751. TREE STUDY ON TABLE-LAND.
No. 752. CASTLE ROCKS ON THE DIVIDE.
Nos. 753, 754. NATURAL ARCH UNDER CASTLE ROCKS.
No. 755. VIEW SOUTH FROM DIVIDE.
No. 756. GEOLOGICAL STUDY.
No. 757. SANDSTONE MONUMENT, near divide.
Nos. 758, 759. SANDSTONE TOWER, near Monument Park.
No. 760. PINE TREE AND CASTELLATED ROCKS.
Nos. 761–763. STUDIES IN MONUMENT PARK.
Nos. 764–766. THE RIO GRANDE DEL NORTE, below Wagon-wheel Gap.
Nos. 767–769. WAGON-WHEEL GAP, Rio Grande.
Nos. 770, 771. ANTELOPE PARK.
Nos. 772, 773. BRISTOL HEAD, Antelope Park.
No. 774. NORTH OF BRISTOL HEAD, Antelope Park.
Nos. 775–777. SAINT MARY'S LAKE, under Bristol Head.
Nos. 778, 779. VIEW ON THE RIO GRANDE, near Lost Trail Creek.
Nos. 780, 781. VIEW OF THE RIO GRANDE, near Pole Creek.
Nos. 782, 783. THE RIO GRANDE, near Lost Trail Creek.
No. 784. BAKER'S PARK, view south from above Howardsville.
No. 785. BAKER'S PARK, from the mouth of Arastra Gulch.
No. 786. ARASTRA GULCH, Baker's Park.
No. 787. VIEW FROM TOP OF SULTAN MOUNTAIN.
No. 788. BABCOCK MOUNTAIN, Sierra La Plata.
Nos. 789, 790. VIEW SOUTH FROM LA PLATA MOUNTAINS.
No. 791. LAKE SAN MIGUEL.
Nos. 793, 794. MERRIT'S RANCH, on the Rio Mancos.
Nos. 795, 796. TWO-STORY CLIFF-HOUSES OF THE RIO MANCOS.
No. 797. RUINS IN THE CLIFFS OF THE RIO MANCOS.
No. 798. TOWER IN THE CAÑON OF THE MANCOS.
No. 799. BLUFFS OF THE MANCOS, containing ruins.
Nos. 800–802. RUINS ABOUT THE HEAD OF THE MCELMO.
Nos. 803, 804. RUINS ABOUT THE LEGENDARY BUTTE ON THE MCELMO.
No. 805. RUINS NEAR THE LEGENDARY BUTTE.
No. 806. CAVE DWELLINGS NEAR LEGENDARY BUTTE.
No. 807. CLIFFS NEAR THE CAVE-DWELLINGS.
No. 808. WATCH-TOWER.
Nos. 809–811. RUINS ON THE HOVENWEEP, Utah.
Nos. 812–823. MISCELLANEOUS PERSONAL GROUPS, illustrating field-work.
Nos. 824, 825. TRIANGULATION, summit of Sultan Mountain.
No. 826. THE MONUMENT ON SULTAN.
No. 827. TOPOGRAPHICAL WORK.
No. 828. AT DINNER.
No. 829. SKETCHING.
No. 830. WRITING LETTERS.
No. 831. PUTTING UP TENT.
No. 832. ROLLING UP BEDDING.
No. 833. STUFFING "WAR-BAG."
No. 834. THE SADDLE-ANIMALS.
No. 835. THE PACK-ANIMALS.
No. 836. THE APAREJO.

No. 837. SINCHING THE APAREJO.
No. 838. PACKING, putting up the load.
No. 839. PACKING, sinching.
No. 840. PACKING, the off side.
No. 841. PACKING, the near side.
No. 842. JOHN, the cook, baking slapjacks.
Nos. 843, 844. SHOEING THE MULES.
No. 845. THREE BEAUTIES, (of mules.)
No. 846. NELLIE.
No. 847. GOOD FRIENDS.
No. 848. DOLLIE.
No. 849. "STRAPPED" MINER.
Nos. 850–897. MISCELLANEOUS CAMP-GROUPS.

1875 SERIES.

COLORADO, UTAH, AND ARIZONA, including a portion of the Territory visited the previous season, but extended southwest to the Moquis Pueblos, in Arizona, and west to the Sierra Abajo, in Utah, a region especially rich in prehistoric remains, a subject thoroughly shown up in this series.

A novelty in this season's work is a series of 20 × 24 plates of prominent points in the San Juan, Uncompagre, and Rocky Mountains, the very first of this size ever made of that region. They give a very much more impressive idea of the real grandeur of those mountains than any smaller view possibly can.

(Negatives 20 × 24.)

No. 1. LAKE SAN CRISTOVAL, a beautiful sheet of water, some two miles in length, lying within the cañon region of the Lake Fork of the Gunnison, about four miles above Lake City. It has been formed by a great earth-slide which has swept down from the mountains on the east. A well-built wagon-road has been constructed up the cañon past this lake to the new mining-region about the head of the Fork, and thence into Baker's Park, over a pass 12,540 feet high. The altitude of the lake is 9,000 feet.

No. 2. UNCOMPAGRE PEAK, a boldly outlined mass of trachyte, 14,235 feet in height, and the highest summit of the Uncompagre Mountains, in Southwestern Colorado. The stand-point from which this view was made is directly east of the peak, and about 12,500 feet in altitude. The northern face is nearly vertical for over 1,000 feet. The peak is named from the valley and river to the northwest of it, and signifies, in Ute dialect, a red spring, or red water.

No. 3. BAKER'S PARK, a view from an elevated point on the west side of the Animas River, which flows through the valley. In the distance is Sultan Mountain, 13,366 feet in height, around either flank of which are the difficult trails leading to the Animas Park, and the La Plata region. At the foot of the mountain is Silverton, county-seat of La Plata County, a young town of hardly two years' growth, but growing rapidly. Two smelting-works, saw-mills, brick-yards, and enterprising merchants are fast making it the leading town of this vicinity. The town has an elevation of 9,400 feet above the sea.

No. 4. LAKE SAN MIGUEL, near the head of one of the principal forks of the San Miguel River, flowing northwesterly into the Gunnison. It is often called Fish Lake, from the abundance of trout in its waters. The mountains back of it belong to the San Juan group, the highest point of which in this view is

the sharp pyramidal peak in the center, known as station 30 on the map, and is just a little short of 14,000 feet. The low depression to the right is Bear Creek Pass, with an elevation at its summit of 12,600 feet. Elevation of lake, 9,720 feet.

No. 5. SAN MIGUEL FALLS. Below San Miguel Lake the river descends very rapidly in a series of falls and cascades, with a difference in elevation of 1,000 feet within three miles. This fall is the first of a series of three or four, one below the other, and is about 60 feet in height.

No. 6. THE UNCOMPAGRE MOUNTAINS, at the head of the Lake Fork of the Gunnison, near Handie's Peak. A glimpse of really Alpine grandeur. The crest of the range in the distance is nearly 14,000 feet high, and covered deep with snow for 2,000 feet below. The stand-point is just at timber-line, a short distance above the road which crosses the range near by into Baker's Park.

No. 7. VIEW ON LAKE FORK, looking up Snare Creek. This point is about twelve miles above San Cristoval Lake, where the cañon of Lake Fork opens out into quite a handsome little valley, called Delusion Park by Ruffner's survey of this region in 1873, but locally known as Cottonwood Valley. At the right is Cottonwood Hill, where the wagon-road makes a detour high up on the hills to avoid an extremely rugged cañon.

No. 8. MOUNT HARVARD, the highest summit of the Sawatch Mountains, lying west of the headwaters of the Arkansas. Its height is 14,384 feet. Lying back so far from the river, it does not occupy a prominent position in the view, the surrounding foot-hills partially hiding it. In the distance is a glimpse of Mount Princeton. Mount Yale is a little farther back, and does not show. In the foreground is the Arkansas River, the stand point being a rocky bluff 1,000 feet above it.

No. 9. MORAINAL VALLEY. On either side of La Plata Creek, for a distance of about three miles, between the mountains and the Arkansas River, are immense lateral morains, averaging 500 feet in height, mute witnesses of the great glaciers which once filled these valleys in the far past. The granite sides of the cañon above, for a distance of from 500 to 1,000 feet above the creek, are deeply grooved and polished by the action of the icy stream.

No. 10. THE UPPER TWIN LAKE. The Twin Lakes of Colorado are fast becoming a favorite pleasure-resort on account of the beauty of the surroundings and the abundance of game, both in and out of the water. They are formed in the trough of an old glacier, terminal morains damming it across, making, in the first place, the lower lake, and then separating it from the other. The lower is two and a half miles long, and the upper one and a half miles. The view is from the narrow neck dividing the lakes, looking up the valley of the Lake Fork of the Arkansas, the mountains beyond belonging to the Sawatch range. Altitude of the lakes, 9,357 feet.

No. 11. ARGENTINE PASS AND GRAY'S PEAK, a view from the west side of the range, from the upper limit of tree-growth. A

wagon-road has been constructed over the pass, reaching an elevation at the summit of 13,100 feet, the highest wagon-road pass in the United States. From it, magnificent views can be had of the Sawatch and Elk Mountains, as well as the surrounding peaks of the main divide. Most prominent among them is Gray's Peak, as shown in the view, 14,345 feet in height. At its foot are some of the silver-mines, for which this region is noted, distinguished by their "shaft-houses" and "dumps."

No. 12. GEORGETOWN, the capital of Clear Creek County, and center of the principal silver-producing region, is situated on South Clear Creek, close to the Snowy range, at an elevation of 8,412 feet. On three sides the mountains rise up abruptly 2,500 feet. The view was made from a trail leading up the east side, 1,000 feet above the town.

(Negatives 5×8.)

No. 240. SAND-DUMPS, NEAR MOSCA PASS. On the east side of San Luis Valley, lying up against Mosca and Music Passes, is an area some ten miles in length and four or five in breadth, covered with mountains of finely-drifted sand. They are ever changing, the prevailing westerly winds continually driving them up against the mountains, until, eventually, the intervening space will be entirely covered.

No. 241. SAN CRISTOVAL LAKE, a beautiful sheet of water, formed by the damming up of the Lake Fork of the Gunnison by a land-slide. It is nearly two miles in length, and less than half a mile broad at its widest place. Elevation, 9,000 feet.

No. 242. ARGENTA FALLS, half a mile below San Cristoval Lake, and about 90 feet in height. Some enterprising miners, who are at work almost beneath the fall, have constructed a neat bridge across it.

No. 243. LOWER FALLS OF LAKE FORK. Two miles below Argenta Falls the river makes another leap about 50 feet, over the massive gray trachytes characteristic of this region.

Nos. 244, 245. UNCOMPAGRE PEAK, 14,235 feet in height, as seen from a point about three miles directly east from it. It is a noted landmark from all the country about, standing head and shoulders above the surrounding mountains.

Nos. 246, 247. UNCOMPAGRE, as seen from the head of the Cebolla, nearly north of the peak, and showing the vertical face of over 1,000 feet on this side of it.

Nos. 248, 249. UNCOMPAGRE, from the southeast, showing the usual route of ascent.

Nos. 250, 251. CUNNINGHAM GULCH, from the camp of the miners of the Mountaineer and North Star lodes, on the south side of the gulch, 1,000 feet above the valley. At the left is King Solomon Mountain, and on the right Green and Galena Mountains, with Rocky Gulch between, up which is the route of the Baker's Park and Del Norte wagon-road.

No. 252. CAMP OF THE MINERS of the North Star and Mountaineer lodes, on King Solomon Mountain, above Cunningham Gulch.

No. 253. CUNNINGHAM GULCH, looking down from Rocky Gulch, showing Tower Mountain on the opposite side of Baker's Park, and above Howardsville.

No. 254. CASCADES at the head of Cunningham Gulch, opposite the Highland Mary mine.

No. 255. A MOUNTAIN TRAIL, leading from the camp to the mines of the Mountaineer, North Star, &c., around on one of the spurs of King Solomon Mountain.

Nos. 256 to 261. A PANORAMIC VIEW of the San Juan Mountains from the summit of King Solomon Mountain, 13,600 feet in height. Prominent on the horizon are the quartzite peaks east of the cañon of the Animas, Kendall Mountain, and the head of Arastra Gulch, and the immense number of peaks lying about the head of the Cement and San Miguel.

No. 262. A VIEW OF THE QUARTZITE PEAKS south of Baker's Park, from King Solomon Mountain.

No. 263. A CAMP at the foot of Cunningham Gulch, under King Solomon Mountain.

No. 264. BAKER'S PARK, as seen from a mile below Howardsville, looking up toward the summit of the range. (See No. 136 of 1874 series.)

No. 265. THE ANIMAS RIVER, near the mouth of Arastra Gulch, looking down toward Sultan Mountain.

No. 266. BAKER'S PARK, looking south from a point two miles above Howardsville. On the left are the snow-tipped summits of Galena, King Solomon, and Kendall Mountains.

No. 267. HEAD OF ARASTRA GULCH, Baker's Park. (See No. 138 of 1874 series.)

No. 268. LAKE SAN MIGUEL. (See Nos. 150 to 153 of 1874 series.)

No. 269. BOREN'S FALLS, in the La Plata Mountains and near the source of La Plata River; is about 75 feet in height.

Nos. 270, 271. HEAD OF BOREN'S GULCH, southern face of the La Plata Mountains.

No. 372. GOLD-MINING IN BOREN'S GULCH.

No. 273. BOREN'S CABIN, the home of the hermit-like miner, who, though living alone, differs from the hermit in being very glad to see visitors.

No. 274. BATTLE ROCK ON THE McELMO. (See Nos. 163–165 of 1874 series.)

No. 275. RUINS at the junction of the McElmo and Hovenweep, consisting of a great square rock perched upon a commanding point of the mesa, upon which are the ruins of a superstructure. Below and close under the rock are the ruins of another building.

Nos. 276, 277, 278. CAÑON OF THE SAN JUAN.—A few miles below the mouth of the Rio De Chelly immense great walls of dark-brown sandstone hem the river closely in, and which grow in height and crowd still closer upon the river until they culminate in the great cañon of the Colorado.

No. 279. PUNCH AND JUDY, two solitary knobs left standing upon the edge of the table-lands bordering the San Juan River. This river affords an excellent study of the sandstones of this region.

No. 280. CLIFF RUINS in the rocks of the mesas bordering the Rio San Juan.

No. 281. CASA DEL ECO, a ruin occupying a great semicircular cave, 250 feet in diameter, on the south side of the Rio San Juan.

Nos. 282 to 286. RUINS OF A CAVE-TOWN, in the lower cañon of the Rio de Chelly, consisting of a series of rooms or houses in a long cave-like crevice in the side of the bluff. They are

nearly 600 feet in length, a ground plan showing them all connected in one solid mass. A central three-story tower is a prominent feature among them. The town is elevated about 50 feet above the valley, while the overhanging bluff extends up some 200 feet above it. The above five views show the town from every point and in all its details.

Nos. 287, 288. RUINS IN MONTEZUMA CAÑON. Between the river Mancos and the Colorado Cañon is a wide waste of arid, desolate country, without any living streams, excepting a few that rise in the Sierra Abajo, and are soon swallowed up by the dry plains at its feet. The drainage resulting from winter rains is carried off through the numberless cañons which intersect the plateaus in every direction, and are perfectly dry excepting during the rainy season. The Montezuma is the principal one of these "washes" debouching into the San Juan, and which, with its ramifications, occupies all the country between El Late and the Sierra Abajo. Throughout its main branch are scattered innumerable ruins of towns, both in valley and upon the bluffs, curious little cliff-houses, towns, and temples. No. 287 represents a large mass of ruins, a peculiar feature of which is a series of large stones set upon end and projecting 5 to 7 feet above the surface. No. 288 is a near view of the group.

No. 289. RUINS IN MONTEZUMA CAÑON, situated upon one of the many isolated buttes, or *mesas*, which occur throughout the cañon, and consisting of a long building subdivided into eight smaller rooms, with a round tower at one end and a large square inclosure at the side. Its most peculiar feature is the size of the stones forming the walls, being very much larger than any ever observed.

No. 290. WATCH-TOWER. Extending north from the river San Juan from opposite the mouth of the De Chelly, is a cañon which runs up to the base of the Sierra Abajo. From the brackish nature of the water which occurs in one portion of it, the cañon is known as Epsom Creek Cañon, the water tasting like that salt. The main cañon has not many ruins, but all its side branches contain large numbers of towers and cliff-houses. Our view is of a square tower upon an inaccessible rock, commanding a wide view.

No. 291. CAVE-HOUSE in one of the side cañons of Epsom Creek.

Nos. 292, 293. CLIFF-HOUSES. Near the head of one of these side cañons, nearly on the divide between Epsom Creek and the Colorado, is a large group of cliff houses, plastered up high in the crevices of the walls bordering the cañon. No. 292 is a near view of one, and No. 293 a distant view showing several.

Nos. 294, 295. CAVE ROCKS. Between the Sierra Abajo and La Sal, in the great basin-like depression falling toward the Colorado, are a number of red and white sandstone buttes, which display in a marked manner their tendency to weather into great circular caves, affording the favorite building-sites of the prehistoric man of this region. These particular rocks, however, give no indications of ever having been occupied. In the distance on the right is the Sierra La Sal.

No. 296. VIEW SOUTH FROM TE-QUA, showing Se-chum-e-way and Moqui, three villages of the Moquis, situated midway between the San Juan and the Little Colorado Rivers, about one hun-

dred miles west of Fort Defiance, in Arizona. They occupy nearly the entire summit of a mesa about 600 feet in height, and so narrow at the southern end, near Moqui, that one can reach across from one perpendicular face to the other.

No. 297. THE HOUSE OF THE CAPITAN OF TE-QUA, showing the peculiar architecture of the Moquis. Access is always gained by ladders to the second floor, and thence by stone steps, outside the building, to the third stories and the roof. They live in the upper stories, reserving the lower ones for work-rooms and storage.

No. 298. MOQUI. A near view of the village, showing in the distance No. 296. Upon the first bench below the summit of the mesa are the goat and sheep corrals, into which they drive their flocks every night. The summits upon which the villages are built are devoid of even the slightest trace of vegetation. Water is carried up in large earthen jugs from springs at the foot of the mesa, and their wood from the mesas some five or six miles away.

No. 299. SHE-PAUL-A-WEE. A view within the court of one of the villages upon a mesa about six miles west of Te-qua. The houses are accessible only from within, the outside walls presenting a perfect blank.

No. 300. MOO-SHA-NEH, upon the extension of the mesa, and south from She-paul-a-wee. It is hard to distinguish it from the rocks upon which it is built. In the distance we look out upon the Painted Desert and the plains of the Little Colorado.

No. 301. SHONG-A-PAH-WEE, another of the seven Moquis pueblos, a short distance west of She-paul a-wee, upon a spur of the same mesa that it is built upon.

No. 302. HOUSE OF THE CAPITAN OF SHONG-A-PAH-WEE, built of undressed stone, and plastered over with adobie mortar, as all the others of the seven villages are also. Nearly all of the buildings are of three stories, arranged after this general style, some few being detached, but more frequently in solid blocks.

Nos. 303 to 308. GROUPS OF THE MEMBERS OF THE SURVEY engaged in the exploration of the Southwest. The last view represents a mountain experience, in which a wagon is taken to pieces, packed upon the backs of mules, and so transported over the more rugged passes, where it would be impossible to draw it.

STEREOSCOPIC SERIES.

Nos. 900, 901. SAN CRISTOVAL LAKE.
No. 902. ARGENTA FALLS, Lake Fork.
Nos. 903–906. LOWER FALLS OF LAKE FORK.
Nos. 907, 908. UNCOMPAGRE MOUNTAIN, from the east.
Nos. 909, 910. UNCOMPAGRE MOUNTAIN, from the south.
Nos. 911–913. UNCOMPAGRE MOUNTAIN, from the north.
Nos. 914, 915. VIEW SOUTH across Henson Creek, from near Uncompagre.
No. 916. UPON THE SUMMIT.
Nos. 917, 918. CUNNINGHAM GULCH, from the Highland Mary mine.
Nos. 919, 920. CUNNINGHAM GULCH, looking down from Rocky Gulch.
No. 921. VIEW UP CUNNINGHAM GULCH, from near Howardsville.
Nos. 922, 923. CAMP IN BAKER'S PARK, near Howardsville.
Nos. 924, 925. HOWARDSVILLE, Baker's Park.

Nos. 926–928. CASCADES at the head of Cunningham Gulch.
Nos. 929–931. TRAIL TO THE NORTH STAR MINE, Cunningham Gulch.
Nos. 932, 933. VIEW FROM THE SUMMIT of King Solomon Mountain.
Nos. 934, 935. BAKER'S PARK, looking up from below Howardsville.
Nos. 936, 937. BAKER'S PARK, view on the Animas, near mouth of Arastra Gulch.
Nos. 938, 939. ARASTRA GULCH.
Nos. 940, 941. BOREN'S CASCADE, La Plata Mountains.
Nos. 942, 943. HEAD OF BOREN'S GULCH, La Plata Mountains.
No. 944. "PUNCH AND JUDY," isolated sandstone monuments of the San Juan River.
Nos. 945–947. VIEWS IN THE CAÑON OF THE SAN JUAN, below the mouth of the Rio De Chelly.
No. 948. CAVE ROCKS, near the Sierra La Sal.
Nos. 949–951. RUINS at the junction of the McElmo and Hovenweep Cañons.
Nos. 952–954. CAVE-RUINS in the bluffs overhanging the San Juan River.
No. 955. CLIFF-HOUSE on the San Juan.
Nos. 956, 957. CASA DEL ÉCO, a remarkable cave-ruin on the San Juan.
Nos. 958–962. RUINS OF A LARGE CAVE-TOWN in the lower cañon of the Rio De Chelly.
No. 963. CAVE-HOUSE in a side cañon of Epsom Creek.
No. 964. RUIN IN MONTEZUMA CAÑON, containing stones of unusual size.
Nos. 965, 966. RUINS IN MONTEZUMA CAÑON, encircled by large stones set upright in the earth.
No. 967. MOQUI.
No. 968. VIEW IN SHE-PAUL-A-WEE.
No. 969. VIEW IN TE QUA.
No. 970. NUM-PÁY-YU.
No. 971. ON THE LOOKOUT.
Nos. 972, 973. A BAKER'S PARK MILK-CART.

DEPARTMENT OF THE INTERIOR,
U. S. GEOLOGICAL AND GEOGRAPHICAL SURVEY OF THE TERRITORIES.
F. V. HAYDEN, U. S. GEOLOGIST-IN-CHARGE.

MISCELLANEOUS PUBLICATIONS—No. 6.

METEOROLOGICAL OBSERVATIONS

MADE DURING

THE YEAR 1873 AND THE EARLY PART OF THE YEAR 1874

IN

COLORADO AND MONTANA TERRITORIES.

PREPARED FOR PUBLICATION BY

GEORGE B. CHITTENDEN.

WASHINGTON:
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NOTES.

The observations in Montana are the continuation of those published in 1873, as made by Mr. Peter Koch, and have been carried on by the same gentleman.

The observations on Mount Lincoln were made by Mr. William Cotton, those at Fairplay by Mr. Miller, and those at Cañon City by Mr. C. W. Talbot.

The barometer employed by Mr. Koch is an aneroid; at the other station, Green's Mountain, barometers are used, and thermometers, by the same maker.

The relative humidities are taken from Glaisher's Tables, as published by the Smithsonian Institution.

Meteorological register, &c., at Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING NOVEMBER 29, 1873—Continued.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	Clouds. Amount.	Clouds. Kind.	Clouds. Direct'n from.	Wind. Amount.	Wind. Direction.	Maximum.	Minimum.	Remarks.
1873. Nov. 29	8 a. m...	25.05	0	.....	.....	.....	10	Nimbus.....	.....	1	N. W.	.....	.....	Snowing lightly all day; 1½ inches deep.
	2 p. m...	25.05	6°	.....	.....	.....	10	.....do.....	.....	2	N. W.	.....	.....	
	9 p. m...	25.03	− 3	.....	.....	.....	10	.....do.....	.....	0	.....	.....	.....	

FOR THE WEEK ENDING DECEMBER 6, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	Clouds. Amount.	Clouds. Kind.	Clouds. Direct'n from.	Wind. Amount.	Wind. Direction.	Maximum.	Minimum.	Remarks.
Nov. 30	8 a. m...	25.02	− 5°	.....	.....	.....	8	Nimbus, cirrus, cirro-stratus..	S. W.	1	S. W.	.....	.....	
	3 p. m...	24.90	+ 5°	.....	.....	.....	6	Cirrus, cirro-stratus.....	S. W.	2	N. E.	.....	.....	
	9 p. m...	24.78	4	.....	.....	.....	10	Nimbus.....	S. W.	2	N. E.	.....	.....	
Dec. 1	8 a. m...	24.86	− 3°	.....	.....	.....	10	.....do.....	S. W.	1	S. W.	.....	.....	
	2 p. m...	24.90	0	.....	.....	.....	8	Nimbus, cirrus.....	S. W.	2	S. W.	.....	.....	
	9 p. m...	24.92	14	.....	.....	.....	10	Nimbus.....	.....	1	S. W.	.....	.....	
2	8 a. m...	24.98	11	.....	.....	.....	10	.....do.....	S. W.	1	S. W.	.....	.....	
	2 p. m...	25.03	0	.....	.....	.....	4	Cirro-cu., cirrus, cirro-stratus.	S. W.	1	S. W.	.....	.....	
	9 p. m...	25.00	20°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
3	9 a. m...	24.92	6°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	5 p. m...	24.76	10°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m...	24.75	10°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
4	7 a. m...	24.87	10°	.....	.....	.....	2	Stratus, cirro-stratus.....	S. W.	0	.....	.....	.....	
	3 p. m...	24.93	3	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
	9 p. m...	24.93	14°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
5	9 a. m...	24.90	5°	.....	.....	.....	0	.....	.....	1	S.	.....	.....	
	5 p. m...	24.78	+13°	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
	9 p. m...	24.72	8	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
6	8 a. m...	24.70	9°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	5 p. m...	24.65	18	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m...	24.58	22	.....	.....	.....	10	Nimbus, cirrus.....	0	0	.....	.....	.....	

FOR THE WEEK ENDING DECEMBER 13, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	Clouds. Amount.	Clouds. Kind.	Clouds. Direct'n from.	Wind. Amount.	Wind. Direction.	Maximum.	Minimum.	Remarks.
Dec. 7	7 a. m...	24.59	25°	.....	.....	.....	8	Cirrus, nimbus.....	S.W.	0	.....	.....	.....	Raw, disagreeable day, with occasional snow showers 0.2 in. deep.
	12½ p. m..	24.63	27°	.....	.....	.....	10	Nimbus.....	S.W.	3	S.W.	.....	.....	

	9 p. m...	24.88	13				10	do		S.W.	4	S.W.		
8	7½ a. m..	25.07	4°				7	Nimbus, cirrus		S.W.	3	S.W.		
	2 p. m...	25.10	18				3	Cirrus		S.W.	0			
	10 p. m...	25.10	− 8°				0				0			
9	8 a. m...	25.05	−10°				0				2	N. E.		A thin frost-mist most of the day.
	1 p. m...	25.02	12°				3	Cirrus		S.W.	3	N. E.		
	9 p. m...	24.87	9				10	Nimbus		0	0			
10	7 a. m...	24.78	10°				5	Cirrus, cirro-stratus		S.W.	0			
	1 p. m...	24.80	33°				4	Cumulus, cirro-cumulus		W.	3	W.		
	9 p. m...	24.82	11°				0				0			
11	8 a. m...	24.84	6°				0				0			
	10 p. m...	25.08	0				0				0			
	9 p. m...													
12	7 a. m...	25.10	0				0				0			
	2 p. m...	25.08	32°				0				0			
	9 p. m...	25.11	17°				0				2	S.		
13	7 a. m...	25.13	17°				0				0			
	2 p. m...	25.04	31°				0				1	S.		
	9 p. m...	24.98	16°				0				0			

FOR THE WEEK ENDING DECEMBER 20, 1873.

Dec. 14	7 a. m...	24.89	22				0				1	S.		
	2 p. m...	24.89	29				3	Cirro-cumulus, cirrus		S.W.	3	S.W.		
	9 p. m...	24.84	28				6	Nimbus		S.W.	0			
15	7 a. m...	24.84	20				2	Cirrus, cirro-cum., cirro-stratus		S.W.	0			
	2 p. m...	24.87	30				3	Cirrus, cirro-cumulus		S.W.	1	S.W.		
	9 p. m...	24.77	31				7	Nimbus		S.W.	2	S.W.		
16	7 a. m...	24.83	26				0				3	S.W.		
	2 p. m...	24.79	32				2	Cirrus		S.W.	5	S.W.		
	9 p. m...	24.80	25				2	Cirrus, cirro-stratus		0	0			
17	7 a. m...	24.83	26				8	Nimbus		S.W.	0			Snowed in the morning, 0.1 inch; cleared off warm; at sundown a raw frost-mist came up.
	2 p. m...	24.98	31				5	Cirrus, cirro-cum., cirro-stratus		S.W.	2	S.W.		
	9 p. m...	25.09	24					Misty			0			
18	7 a. m...	25.22	9				1	Stratus		S.W.	2	S. E.		
	2 p. m...	25.19	31				9	Nimbus, cirro-stratus		S.W.	0			
	9 p. m...	25.15	17				7	Nimbus, cirrus		0	3	S.W.		
19	7 a. m...	25.32	15°				8	Cumulus, cirro-cumulus		S.W.	2	E.		
	2 p. m...	25.22	22				0				2	N. E.		
	9 p. m...	25.07	5				0				0			
20	7 a. m...	24.87	7				3	Cirrus		S.W.	1	S. E.		
	2 p. m...	24.82	28				0				0			
	9 p. m...	24.72	10				0				0			

Meteorological register from November 10, 1873, to January 31, 1874, at Judith Basin, Mont.

FOR THE WEEK ENDING NOVEMBER 15, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. Nov. 10	6½ a. m.	25.03	50°				9	Nimbus, cirro-stratus	S. W.	1	S. W.			At crossing of Muscleshell.
	5 p. m.	24.32	37°				2	Nimbus, cumulus	N. W.	5	N. W.			At springs on west side of Judith Gap.
	9 p. m.													
11	7 a. m.	24.57	30°				3	Cirrus, cirro-cumulus	N. W.	2	N. W.			At Judith Gap.
	5½ p. m.	24.48	26°				0			0				Do.
	9 p. m.													
12	7 a. m.	24.28	27°				1	Cirrus	N. W.	1	N. W.			Do.
	6 p. m.	24.40	37°				0			1	S.			At the base of the Big Snower's, near Beaver Creek.
	9 p. m.													
13	7 a. m.	24.33	33°				0			1	S. E.			
	1 p. m.	24.37	63°				0			2	N. E.			At the mouth of the cañon of Big Cottonwood Creek.
	6 p. m.	24.30	49°				0			1	S. E.			Do.
14	7 a. m.	24.41	40°				2	Cirrus, cirro-stratus	0	1	S. E.			At Big Cottonwood.
	5 p. m.	24.85	44°				7	Cumulus, cumulo-stratus	S. W.	2	S. W.			At Fort Defiance, a trading-post on Trout Creek, (or Big Spring Creek,) where all the subsequent observations are taken.
	9 p. m.													
15	7 a. m.	24.98	24°				5	Cirro-cumulus, cirrus	S. E.	2	S. E.			
	1 p. m.	24.95	52°							4	S. W.			Dense, smoky atmosphere.
	5 p. m.	25.02	43°				0			3	S. W.			

FOR THE WEEK ENDING NOVEMBER 22, 1873.

Nov. 16	2 a. m.		30°											It began raining at 11 p. m.; rained hard and blew furiously from S. W. to 1 a. m., when the wind fell and the rain changed to snow, 4 inches deep.
	7 a. m.	25.08	47°				10	Nimbus	S. W.	2	S. W.			
	2 p. m.	24.90	64°				9	Nimbus, cirro-cumulus	S. W.	5	S. W.			

	6 p. m.	24.80	55				2	Cumulus, cumulo-stratus	S. W.	4	S. W.			
17	8 a. m.	25.02	32°				5	Nimbus, cirrus	N. W.	2	N. W.			
	3 p. m.	25.28	35°				5	do	N. W.	4	N. W.			
	7 p. m.	25.40	30°				6	do	N. W.	2	N. W.			
18	8 a. m.	25.38	18°				0			0				
	6 p. m.	25.12	19°				0			0				
	8 p. m.	25.10	13°				0			0				
19	8 a. m.	24.94	20°				8	Cirrus, cirro-stratus	N. W.	0				
	2 p. m.		47°				9	Nimbus, cirrus	W.	2	W.			
	8 p. m.	25.33	36°				0			3	S. W.			
20	8 a. m.	25.17	17°				0		0	0				
	2 p. m.	25.02	38°				0		0	0				
	8 p. m.	24.93	16				0		0	0				
21	8 a. m.	24.88	27°				3	Cirrus, cirro-stratus	W.	2	S. E.			
	2 p. m.	24.78	37°				10	Nimbus	E.	3	E.			
	8 p. m.	24.72	31°				10	do	E.	1	E.			Began snowing at 8 p. m.; fell 2 inches during night.
22	8 a. m.	25.03	31°				10	do	S. W.	1	S. W.			Snow melting rapidly.
	2 p. m.	25.07	39°				1	do	N. W.	1	N. W.			
	9 p. m.													

FOR THE WEEK ENDING NOVEMBER 29, 1873.

Nov. 23	8 a. m.	25.02	39				0			2	S. W.			
	8 p. m.	24.98	38				2	Nimbus	S. W.	3	S. W.			
	9 p. m.													
24	8 a. m.	25.13	35°				10	Nimbus		1	S. W.			Drizzling.
	8 p. m.	25.05	35				10	do		1	S.			Sprinkling; day soft and cloudy, with occasional showers of rain and snow.
	9 p. m.													
25	9 a. m.	24.78	51°				7	Nimbus, cirrus, cirro-stratus	S. W.	5	S. W.			A warm "Chenook" wind took all the snow off; at sun-down the wind turned westerly, blew furiously in the early part of the night; afterward calmed down and snow fell 2 inches deep.
	2 p. m.	24.62	55°				6	Nimbus, cirrus	S. W.	2	S. W.			
	8 p. m.	24.58	46°				9	Nimbus	W.	8	W.			
26	7½ a. m.	25.03	19°				10	do		2	W.			Snowing all day to the depth of 4 inches.
	3 p. m.	25.07	20				10	do		2	W.			
	8 p. m.	25.07	14				10	do		0				
27	8 a. m.	25.15	6°				10	Cirrus	0	0				
	3½ p. m.	25.04	8°				0			2	S. E.			
	9 p. m.	24.90	+ 1°				0			0				
28	8 a. m.	24.90	− 9°				0			0				At 3 p. m. a cold, raw, fresh wind came from N. W.; cleared off at 8 p. m.
	2 p. m.	24.93	9°				1	Cirrus, cirro-stratus	N. W.	0	N. E.			
	9 p. m.	24.90	3°				8	Cirrus, cirro-cumulus	N. W.	1	N. W.			

Meteorological register from March 23, 1873, to May 31, 1873, at Bozeman, Mont

FOR THE WEEK ENDING MARCH 29, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	Clouds. Amount.	Clouds. Kind.	Clouds. Direct'n from.	Wind. Amount.	Wind. Direction.	Maximum.	Minimum.	Remarks.
1873. Mar. 23	7 a. m.	.....	.....	33.1	31.2	.78	9	Nimbus, cirro-cumulus	W.	2	S.W.	54.3	21.0	
	2 p. m.	.....	.....	40.6	37.8	.77	10	Nimbus	.....	5	N. W.	.....	.....	
	9 p. m.	.....	.....	31.9	30.4	.86	10	.....do	.....	2	N. W.	.....	.....	Occasional snow showers; water in gauge, 0.20.
24	7 a. m.	.....	.....	17.8	17.7	1.00	10	.....do	.....	2	W.	34.2	14.5	
	2 p. m.	.....	.....	29.8	28.1	.84	8	Nimbus, cirrus	N. W.	1	N. W.	.....	.....	
	9 p. m.	.....	.....	13.2	12.9	.96	0	.....	.....	2	W.	.....	.....	
25	7 a. m.	.....	.....	20.7	19.0	.49	9	Cirrus, cirro-cum., cirro-stratus	W.	1	N. E.	42.0	10.1	
	2 p. m.	.....	.....	40.8	35.0	.58	10	Nimbus	.....	0	.....	.....	.....	
	9 p. m.	.....	.....	32.3	30.2	.76	1	Cirro-stratus	S. W.	1	S.W.	.....	.....	
26	7 a. m.	.....	.....	35.2	33.1	.81	2	Cirrus, cirro-stratus	S. W.	1	S.W.	50.1	25.2	
	2 p. m.	.....	.....	47.4	39.5	.52	10	Nimbus	.....	3	S.W.	.....	.....	
	9 p. m.	.....	.....	37.8	34.9	.75	10	.....do	.....	3	S.W.	.....	.....	
27	7 a. m.	.....	.....	27.7	27.3	.89	10	.....do	.....	3	S.W.	38.8	25.8	Snow, night; 8 a. m. 0.60 inch; water, 0.05 inch.
	2 p. m.	.....	.....	34.8	31.2	.65	8	Nimbus, cirrus	W.	5	W.	.....	.....	
	9 p. m.	.....	.....	30.0	29.7	.93	10	Nimbus	.....	5	S.W.	.....	.....	
28	7 a. m.	.....	.....	32.8	31.4	.80	5	Cirro-cumulus, cirrus	W.	2	W.	48.0	25.9	
	2 p. m.	.....	.....	46.3	37.8	.47	7	Nimbus, cirro-cumulus	W.	3	W.	.....	.....	
	9 p. m.	.....	.....	39.1	34.3	.63	8	Nimbus	W.	2	W.	.....	.....	
29	7 a. m.	.....	.....	29.1	29.0	1.00	10	.....do	.....	3	W.	41.6	28.8	Snow, night; 8 a. m. 2.80 inches; water, 0.22 inch.
	2 p. m.	.....	.....	38.1	33.2	.62	8	Nimbus, cirro-cumulus	W.	5	W.	.....	.....	
	9 p. m.	.....	.....	24.1	22.2	.54	0	.....	.....	2	S.W.	.....	.....	

FOR THE WEEK ENDING APRIL 12, 1873.

April 6	7 a. m.	.....	29.0	29.0	27.0	.67	3	Cirro-cumulus	N.	1	E.	39.6	8.0	
	2 p. m.	.....	34.9	34.9	33.1	.81	2	Cumulus, cirro-cumulus	N.	2	S.W.	.....	.....	
	9 p. m.	.....	19.6	19.6	19.0	.82	8	.....do	N.	2	S.W.	.....	.....	
7	7 a. m.	.....	26.0	26.0	23.1	.44	2	Cumulus	N.	1	W.	41.3	10.4	
	2 p. m.	.....	38.9	38.9	35.7	.76	0	.....	.....	1	N. W.	.....	.....	
	9 p. m.	.....	25.3	25.3	24.0	.63	1	Cirro-stratus	0	1	S.W.	.....	.....	
8	7 a. m.	.....	28.4	28.4	26.2	.58	4	Cirrus, cirro-cum., cirro-stratus	N.	1	S.W.	48.0	16.2	
	2 p. m.	.....	47.0	47.0	39.8	.57	10	Nimbus	.....	1	N.E.	.....	.....	

Meteorological register, &c., at Bozeman, Mont.—Continued.

FOR THE WEEK ENDING APRIL 12, 1873—Continued.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. April 8	9 p. m.	.....	37.1	37.1	34.0	.75	10	Nimbus	.....	4	S.W.	.....	.....	
9	7 a. m.	.....	31.8	31.8	31.0	.87	10	do	.....	4	W.	48.0	27.5	Snow 1 p. m.; 10 a. m. 3.8 inches; water, 0.35 inch.
	2 p. m.	.....	45.3	45.3	43.4	.92	6	Cirro-cumulus, cirrus	N.	2	S.W.	.....	.....	
	9 p. m.	.....	32.9	32.9	31.3	.78	10	Nimbus	.....	1	S.W.	.....	.....	
10	7 a. m.	.....	40.0	40.0	35.1	.63	1	Cirro-cumulus, cirro-stratus	0	1	N.W.	50.5	28.0	
	2 p. m.	.....	49.2	49.2	40.8	.53	1	Cirro-stratus	0	1	N.W.	.....	.....	
	9 p. m.	.....	33.0	33.0	29.9	.68	3	Cirrus, cirro-stratus	0	1	S.W.	.....	.....	
11	7 a. m.	.....	36.8	36.8	31.9	.61	9	Nimbus, cirrus	0	0	.....	63.1	29.8	
	2 p. m.	.....	58.1	58.1	44.2	.37	0	.....	.....	3	S.W.	.....	.....	
	9 p. m.	.....	41.4	41.4	35.4	.58	5	Cirro-cumulus, cirro-stratus	S.	1	N.	.....	.....	
12	7 a. m.	.....	37.0	37.0	35.8	.91	10	Nimbus, cirrus	S.W.	2	S.W.	46.0	32.4	Night, snow; water 0.09 inch.
	2 p. m.	.....	38.3	38.3	34.6	.69	10	Nimbus	.....	3	W.	.....	.....	
	9 p. m.	.....	31.3	31.3	29.8	.80	10	do	.....	1	S.W.	.....	.....	

FOR THE WEEK ENDING APRIL 19, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
April 13	7 a. m.	.....	32.5	32.5	30.8	.82	10	Nimbus	.....	3	N.W.	46.4	28.2	Snow, night; water in gauge 0.08 inch.
	2 p. m.	.....	40.0	40.0	33.6	.57	5	Cumulus, cirro-cumulus	N.W	1	N.	.....	.....	
	9 p. m.	.....	27.7	27.7	26.2	.70	4	do	N.	1	N.	.....	.....	
14	7 a. m.	.....	35.0	35.0	29.1	.52	0	.....	.....	1	S.E.	47.3	19.5	
	2 p. m.	.....	45.7	45.7	34.6	.38	0	.....	.....	2	S.E.	.....	.....	
	9 p. m.	.....	28.5	28.5	24.3	.40	0	.....	.....	3	E.	.....	.....	
15	7 a. m.	.....	38.8	38.8	31.3	.50	2	Cirrus, cirro-stratus	0	1	S.E.	55.4	21.0	
	2 p. m.	.....	52.6	52.6	40.5	.39	0	.....	.....	2	E.	.....	.....	
	9 p. m.	.....	37.1	37.1	29.8	.49	0	.....	.....	3	E.	.....	.....	
16	7 a. m.	.....	44.1	44.1	35.9	.50	0	.....	.....	2	E.	62.1	25.7	
	2 p. m.	.....	62.1	62.1	47.7	.38	1	Cirro-stratus	N.W.	1	N.W.	.....	.....	
	9 p. m.	.....	40.0	40.0	33.2	.52	0	.....	.....	2	S.E.	.....	.....	
17	7 a. m.	.....	42.7	42.7	35.8	.59	8	Cirrus, cirro-stratus	S.W.	1	S.W.	71.3	31.0	
	2 p. m.	.....	65.0	65.0	46.8	.28	4	Cirrus, cirro-cumulus	S.W.	1	N.E.	.....	.....	
	9 p. m.	.....	48.4	48.4	38.8	.44	2	Nimbus, cirrus	S.E.	4	S.E.	.....	.....	
18	7 a. m.	.....	49.6	49.6	40.8	.49	9	do	S.W.	1	S.E.	66.6	40.2	

	2 p. m.	.....	63.5	63.5	47.4	.35	1	Cumulus, cirro-cumulus	S. W.	0	.....	.....	.....	
	9 p. m.	.....	46.9	46.9	40.5	.61	1	Nimbus	S. W.	1	S. W.	.....	.....	
19	7 a. m.	.....	51.2	51.2	44.4	.58	2	Cirrus, cirro-stratus	0	1	S.	68.0	38.0	
	2 p. m.	.....	67.8	67.8	50.4	.33	1	Cirro-cumulus	0	0	.....	.....	.....	
	9 p. m.	.....	45.6	45.6	40.7	.66	0	.....	.....	2	S. E.	.....	.....	

FOR THE WEEK ENDING APRIL 26, 1873.

20	7 a. m.	.....	50.6	50.6	44.2	.64	9	Cirrus, cirro-stratus	S. W.	1	S. E.	76.8	37.1	
	2 p. m.	.....	76.8	76.8	54.1	.25	1	Cirro-stratus	W.	1	W.	.....	.....	
	9 p. m.	.....	57.8	57.8	44.2	.39	6	Nimbus	.....	2	S. E.	.....	.....	
21	7 a. m.	.....	54.0	54.0	43.6	.47	9	.....do	S. W.	1	S. E.	76.3	49.3	
	2 p. m.	.....	72.3	72.3	54.2	.32	8	Nimbus, cirro-cumulus	S. W.	1	S. W.	.....	.....	
	9 p. m.	.....	37.5	37.5	36.8	.96	10	Nimbus	0	0	.....	.....	.....	Rain and snow 7 p. m.; 1 p. m., water, 0.42 inches.
22	7 a. m.	.....	34.3	34.3	33.9	.95	10	.....do	.....	2	S. W.	35.2	30.8	
	2 p. m.	.....	25.3	25.3	24.9	.87	10	.....do	.....	5	S. E.	.....	.....	
	9 p. m.	.....	14.3	14.3	14.1	.89	4	.....do	.....	7	E.	.....	.....	
23	7 a. m.	.....	18.3	18.3	17.8	.82	10	.....do	.....	6	E.	29.0	6.5	
	2 p. m.	.....	23.8	23.8	21.2	.44	4	Cumulus	E.	6	E.	.....	.....	
	9 p. m.	.....	16.2	16.2	15.4	.68	1	.....do	E.	4	E.	.....	.....	
24	7 a. m.	.....	23.0	23.0	21.6	.60	1	Cumulus, cumulo-stratus	E.	0	.....	34.6	7.3	
	2 p. m.	.....	33.9	33.9	30.8	.71	1	Cumulus	E.	4	E.	.....	.....	
	9 p. m.	.....	23.0	23.0	21.7	.72	0	.....	.....	3	E.	.....	.....	
25	7 a. m.													
	2 p. m.													
	6 p. m.													
26	7 a. m.	.....	Observer absent; no record kept; nor for the week ending May 3, 1873.											
	2 p. m.													
	9 p. m.													

FOR THE WEEK ENDING MAY 10, 1873.

May 4	7 a. m.	.....	59.5	59.5	49.2	.50	2	Cirro-cumulus	0	1	S. W.	66.5	.....	Rain 8 p. m.; 12 p. m., 0.20 inch.
	2 p. m.	.....	63.2	63.2	48.9	.39	1	.....do	0	1	N. W.	.....	.....	
	9 p. m.	.....	46.5	46.5	43.8	.85	10	Nimbus	.....	2	N. W.	.....	.....	
5	7 a. m.	.....	54.2	54.2	45.0	.51	4	Cirro-cumulus, cumulus	N. W.	1	N. W.	61.2	40.0	Showers; 0.02 inch.
	2 p. m.	.....	50.0	50.0	44.1	.63	9	Nimbus	.....	1	N. W.	.....	.....	
	9 p. m.	.....	34.3	34.3	30.1	.63	1	Cirrus	0	1	S. W.	.....	.....	
6	7 a. m.	.....	51.3	51.3	42.2	.50	1	Cirro-cumulus	S. W.	1	S. W.	57.6	26.5	
	2 p. m.	.....	51.4	51.4	39.5	.39	9	Nimbus, cumulus	S. W.	2	S. W.	.....	.....	
	9 p. m.	.....	33.0	33.0	32.5	.94	10	Nimbus	.....	1	S. W.	.....	.....	Snow 9 p. m.; 7 a. m., water, 0.52 inch.
7	7 a. m.	.....	35.0	35.0	34.5	.95	10	.....do	.....	1	N. W.	45.1	29.5	
	2 p. m.	.....	43.2	43.2	40.3	.78	8	.....do	0	0	.....	.....	.....	
	9 p. m.	.....	32.0	32.0	30.0	.76	7	Nimbus, cirro-cumulus	N. E.	1	N. E.	.....	.....	

Meteorological register, &c., at Bozeman, Mont.—Continued.

FOR THE WEEK ENDING MAY 10, 1873—Continued.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. May 8	7 a. m.	.....	45.9	45.9	41.0	.66	3	Cumulus, cirro-cumulus	E.	0	.....	51.4	32.0	Showers, 0.01 inch.
	2 p. m.	.....	49.9	49.9	40.0	.45	9	Nimbus, cirro-cumulus	N. E.	2	N. E.	.....	.....	
	9 p. m.	.....	33.1	33.1	32.0	.89	2	Cirro-cumulus, cirro-stratus	N. E.	1	N. E.	.....	.....	
9	7 a. m.	.....	45.8	45.8	37.4	.45	2	Cumulus, cirro-cumulus	S. W.	1	S. W.	56.4	30.5	
	2 p. m.	.....	55.8	55.8	43.7	.42	1	Cirro-cumulus	W.	1	W.	.....	.....	
	9 p. m.	.....	38.1	38.1	33.2	.62	0	.....	.....	1	S. W.	.....	.....	
10	7 a. m.	.....	56.1	56.1	45.6	.48	0	.....	.....	0	.....	68.8	29.1	
	2 p. m.	.....	68.6	68.6	49.7	.53	1	Cirro-stratus	0	1	N. W.	.....	.....	
	9 p. m.	.....	44.3	44.3	37.2	.55	0	.....	.....	2	S. W.	.....	.....	

FOR THE WEEK ENDING MAY 17, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
May 11	7 a. m.	.....	61.8	61.8	50.0	.44	8	Cirrus, cirro-stratus	W.	0	.....	75.0	36.9	
	2 p. m.	.....	68.9	68.9	52.3	.35	8	Cirro-cumulus, nimbus	W.	2	N. W.	.....	.....	
	9 p. m.	.....	47.0	47.0	41.2	.61	2	Cirro-cumulus, cirro-stratus	W.	2	W.	.....	.....	
12	7 a. m.	.....	65.8	65.8	51.7	.42	1	Cirrus	0	1	S. W.	78.7	39.9	
	2 p. m.	.....	57.1	57.1	51.3	.66	8	Nimbus, cirrus	S. W.	0	.....	.....	.....	
	9 p. m.	.....	48.2	48.2	46.3	.85	10	Nimbus	0	0	.....	.....	.....	
13	7 a. m.	.....	55.1	55.1	50.2	.70	6	Cumulus, cirro-cumulus	W.	0	.....	64.0	39.3	Rain, night; 0.09 inch.
	2 p. m.	.....	62.3	62.3	46.4	.33	7	.....do	W.	2	N. W.	.....	.....	
	9 p. m.	.....	43.4	43.4	39.0	.71	8	Nimbus, cumulus	W.	0	.....	.....	.....	
14	7 a. m.	.....	52.7	52.7	44.2	.51	8	Cumulus, cirro-cumulus	W.	0	.....	64.8	32.3	
	2 p. m.	.....	62.7	62.7	47.0	.43	6	Nimbus, cumulus	W.	2	W.	.....	.....	
	9 p. m.	.....	42.9	42.9	38.1	.65	0	.....	.....	4	E.	.....	.....	
15	7 a. m.	.....	45.0	45.0	39.0	.61	9	Nimbus, cumulus	E.	3	E.	55.6	37.8	
	2 p. m.	.....	53.4	53.4	42.1	.43	9	Cirrus, cirro-cumulus	E.	4	E.	.....	.....	
	9 p. m.	.....	43.9	43.9	35.7	.54	10	Nimbus	.....	3	E.	.....	.....	
16	7 a. m.	.....	45.6	45.6	38.8	.60	10	.....do	.....	3	E.	50.0	38.8	
	2 p. m.	.....	48.9	48.9	42.3	.62	10	.....do	.....	3	E.	.....	.....	
	9 p. m.	.....	38.5	38.5	36.7	.85	4	.....do	.....	2	E.	.....	.....	
17	7 a. m.	.....	49.0	49.0	44.1	.67	9	Nimbus, cirrus	E.	0	.....	58.0	37.0.	Rain, night; 0.02 inch.
	2 p. m.	.....	55.2	55.2	46.2	.52	5	Nimbus, cumulus	E.	2	E.	.....	.....	
	9 p. m.	.....	41.6	41.6	37.8	.71	1	Stratus	0	3	E.	.....	.....	

FOR THE WEEK ENDING MAY 24, 1873.

18	7 a. m.			57.5	45.3	.42	1	Cumulus, cirro-cumulus	0	1	N.	67.5	33.2	
	2 p. m.			62.3	45.2	.31	1	Cumulus	0	1	N.			
	9 p. m.			48.1	42.0	.62	2	Cumulus, cirro-cumulus	E.	5	E.			
19	7 a. m.			38.2	37.3	.91	10	Nimbus		2	N.	53.8	37.0	Rain, night; 0.03 inch.
	2 p. m.			49.6	43.1	.62	10	do		1	N.			
	9 p. m.			42.0	38.8	.76	10	do		1	N. W.			
20	7 a. m.			52.8	46.2	.59	8	Nimbus, cirrus	N. W.	0		60.8	37.0	Rain, night; 0.02 inch.
	2 p. m.			58.4	47.7	.49	9	Nimbus, cumulus	W.	1	W.			
	9 p. m.			40.1	39.8	.98	10	Nimbus		0				
21	7 a. m.			34.5	34.4	.99	10	do		1	S. W.	43.0	33.0	From 8 p. m. of the 20th to 10 p. m. of the 24th, it rained nearly all the time. The first night several inches of snow fell; afterward it changed to a cold rain, with frequent intervals, a struggle evidently going on all the time between the E. and W. winds. Water in gauge, 2.37 inches.
	2 p. m.			40.2	39.6	.95	10	do		1	S. W.			
	9 p. m.			34.3	33.2	.88	10	do		3	S. W.			
22	7 a. m.			38.3	37.7	.95	10	do		1	S. W.	51.9	33.2	
	2 p. m.			45.0	42.5	.81	10	do		0				
	9 p. m.			39.8	38.5	.89	8	do	N. W.	1	N. W.			
23	7 a. m.			44.8	42.4	.82	10	do		2	N. E.	50.0	38.3	
	2 p. m.			46.7	43.1	.75	10	do		3	E.			
	9 p. m.			42.0	38.4	.73	10	do		1	E.			
24	7 a. m.			37.0	36.3	.91	10	do		1	S. E.	44.0	35.0	
	2 p. m.			42.3	40.2	.84	10	do		2	E.			
	9 p. m.			38.8	37.7	.91	10	do		1	E.			

FOR THE WEEK ENDING MAY 31, 1873.

25	7 a. m.			48.8	44.2	.70	3	Cumulus	S. W.	1	S. W.	61.8	33.2	
	2 p. m.			59.8	49.4	.50	8	Cirrus, cumulus, cirro-cumulus	0	1	N. W.			
	9 p. m.			44.9	40.9	.72	3	Cirrus, cirro-stratus	0	0				
26	7 a. m.			66.3	50.0	.35	5	do	0	0		72.2	36.6	Rain 6 p. m.; water 0.09 inch.
	2 p. m.			63.3	50.8	.42	10	Nimbus		2	S. W.			
	9 p. m.			42.9	41.8	.92	7	Nimbus, cirrus	0	0				
27	7 a. m.			51.9	45.0	.63	3	Nimbus, cumulus	S. W.	1	S. W.	65.1	33.9	
	2 p. m.			62.6	49.0	.41	5	Cumulus	S. W.	1	S. W.			
	9 p. m.			42.0	40.7	.92	10	Nimbus		0				Rain 6 p. m.; 1 p. m. 0.49 inch.
28	7 a. m.			45.0	42.4	.81	10	do		3	E.	47.4	37.0	
	2 p. m.			44.8	41.4	.78	10	do		1	S. W.			
	9 p. m.			39.0	37.4	.87	10	do		1	S. W.			
29	7 a. m.			46.4	44.7	.85	10	do		1	N. W.	58.4	37.4	Rain, night 0.17 inch.
	2 p. m.			57.8	50.6	.61	9	do		1	S. W.			
	9 p. m.			42.0	41.8	.98	10	do		0				Rain 3 p. m.; 12 m. 1.21 inches.
30	7 a. m.			34.2	34.1	.98	10	do		0		51.9	32.2	
	2 p. m.			42.8	40.4	.80	6	Nimbus, cirro-cumulus	S. W.	1	S. W.			
	9 p. m.			35.2	35.1	.99	10	Nimbus		1	N. W.			Rain 6 p. m.; 2 a. m. 0.46 inch.
31	7 a. m.			48.1	41.4	.55	7	Nimbus, cirro-cumulus	S. W.	2	S. W.	57.8	31.0	
	2 p. m.			56.2	46.3	.48	5	do	S. W.	2	S. W.			
	9 p. m.			39.8	35.0	.64	4	Cumulus, cirro-cumulus	S. W.	1	S. W.			

Meteorological register from November 10, 1873, to January 31, 1874, at Judith Basin, Mont.

FOR THE WEEK ENDING NOVEMBER 15, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. Nov. 10	6½ a. m.	25.03	50°				9	Nimbus, cirro-stratus	S. W.	1	S. W.			At crossing of Muscleshell.
	5 p. m.	24.32	37°				2	Nimbus, cumulus	N. W.	5	N. W.			At springs on west side of Judith Gap.
	9 p. m.													
11	7 a. m.	24.57	30°				3	Cirrus, cirro-cumulus	N. W.	2	N. W.			At Judith Gap.
	5½ p. m.	24.48	26°				0			0				Do.
	9 p. m.													
12	7 a. m.	24.28	27°				1	Cirrus	N. W.	1	N. W.			Do.
	6 p. m.	24.40	37°				0			1	S.			At the base of the Big Snower's, near Beaver Creek.
	9 p. m.													
13	7 a. m.	24.33	33°				0			1	S. E.			
	1 p. m.	24.37	63°				0			2	N. E.			At the mouth of the cañon of Big Cottonwood Creek.
	6 p. m.	24.30	49°				0			1	S. E.			Do.
14	7 a. m.	24.41	40°				2	Cirrus, cirro-stratus	0	1	S. E.			At Big Cottonwood.
	5 p. m.	24.85	44°				7	Cumulus, cumulo-stratus	S. W.	2	S. W.			At Fort Defiance, a trading-post on Trout Creek, (or Big Spring Creek,) where all the subsequent observations are taken.
	9 p. m.													
15	7 a. m.	24.98	24°				5	Cirro-cumulus, cirrus	S. E.	2	S. E.			
	1 p. m.	24.95	52°							4	S. W.			Dense, smoky atmosphere.
	5 p. m.	25.02	43°				0			3	S. W.			

FOR THE WEEK ENDING NOVEMBER 22, 1873.

Nov. 16	2 a. m.		30°											It began raining at 11 p. m.; rained hard and blew furiously from S. W. to 1 a. m., when the wind fell and the rain changed to snow, 4 inches deep.
	7 a. m.	25.08	47°				10	Nimbus	S. W.	2	S. W.			
	2 p. m.	24.90	64°				9	Nimbus, cirro-cumulus	S. W.	5	S. W.			

	6 p. m.	24.80	55				2	Cumulus, cumulo-stratus	S. W.	4	S. W.			
17	8 a. m.	25.02	32°				5	Nimbus, cirrus	N. W.	2	N. W.			
	3 p. m.	25.28	35°				5	do	N. W.	4	N. W.			
	7 p. m.	25.40	30°				6	do	N. W.	2	N. W.			
18	8 a. m.	25.38	18°				0			0				
	6 p. m.	25.12	19°				0			0				
	8 p. m.	25.10	13°				0			0				
19	8 a. m.	24.94	20°				8	Cirrus, cirro-stratus	N. W.	0				
	2 p. m.		47°				9	Nimbus, cirrus	W.	2	W.			
	8 p. m.	25.33	36°				0			3	S. W.			
20	8 a. m.	25.17	17°				0		0	0				
	2 p. m.	25.02	38°				0		0	0				
	8 p. m.	24.93	16				0		0	0				
21	8 a. m.	24.88	27°				3	Cirrus, cirro-stratus	W.	2	S. E.			
	2 p. m.	24.78	37°				10	Nimbus	E.	3	E.			
	8 p. m.	24.72	31°				10	do	E.	1	E.			Began snowing at 8 p. m.; fell 2 inches during night.
22	8 a. m.	25.03	31°				10	do	S. W.	1	S. W.			Snow melting rapidly.
	2 p. m.	25.07	39°				1	do	N. W.	1	N. W.			
	9 p. m.													

FOR THE WEEK ENDING NOVEMBER 29, 1873.

Nov. 23	8 a. m.	25.02	39				0			2	S. W.			
	8 p. m.	24.98	38				2	Nimbus	S. W.	3	S. W.			
	9 p. m.													
24	8 a. m.	25.13	35°				10	Nimbus		1	S. W.			Drizzling.
	8 p. m.	25.05	35				10	do		1	S.			Sprinkling; day soft and cloudy, with occasional showers of rain and snow.
	9 p. m.													
25	9 a. m.	24.78	51°				7	Nimbus, cirrus, cirro-stratus	S. W.	5	S. W.			A warm "Chenook" wind took all the snow off; at sun-down the wind turned westerly, blew furiously in the early part of the night; afterward calmed down and snow fell 2 inches deep.
	2 p. m.	24.62	55°				6	Nimbus, cirrus	S. W.	2	S. W.			
	8 p. m.	24.58	46°				9	Nimbus	W.	8	W.			
26	7½ a. m.	25.03	19°				10	do		2	W.			Snowing all day to the depth of 4 inches.
	3 p. m.	25.07	20				10	do		2	W.			
	8 p. m.	25.07	14				10	do		0				
27	8 a. m.	25.15	6°				10	Cirrus	0	0				
	3½ p. m.	25.04	8°				0			2	S. E.			
	9 p. m.	24.90	+ 1°				0			0				
28	8 a. m.	24.90	− 9°				0			0				At 3 p. m. a cold, raw, fresh wind came from N. W.; cleared off at 8 p. m.
	2 p. m.	24.93	9°				1	Cirrus, cirro-stratus	N. W.	0	N. E.			
	9 p. m.	24.90	3°				8	Cirrus, cirro-cumulus	N. W.	1	N. W.			

Meteorological register, &c., at Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING NOVEMBER 29, 1873—Continued.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. Nov. 29	8 a. m...	25.05	0	.....	.....	.....	10	Nimbus.....	.....	1	N. W.	.....	.....	Snowing lightly all day; 1½ inches deep.
	2 p. m...	25.05	6°	.....	.....	.....	10	.....do.....	.....	2	N. W.	.....	.....	
	9 p. m...	25.03	− 3	.....	.....	.....	10	.....do.....	.....	0	.....	.....	.....	

FOR THE WEEK ENDING DECEMBER 6, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
Nov. 30	8 a. m...	25.02	− 5°	.....	.....	.....	8	Nimbus, cirrus, cirro-stratus..	S. W.	1	S. W.	.....	.....	
	3 p. m...	24.90	+ 5°	.....	.....	.....	6	Cirrus, cirro-stratus.....	S. W.	2	N. E.	.....	.....	
	9 p. m...	24.78	4	.....	.....	.....	10	Nimbus.....	S. W.	2	N. E.	.....	.....	
Dec. 1	8 a. m...	24.86	− 3°	.....	.....	.....	10	.....do.....	S. W.	1	S. W.	.....	.....	
	2 p. m...	24.90	0	.....	.....	.....	8	Nimbus, cirrus.....	S. W.	2	S. W.	.....	.....	
	9 p. m...	24.92	14	.....	.....	.....	10	Nimbus.....	.....	1	S. W.	.....	.....	
2	8 a. m...	24.98	11	.....	.....	.....	10	.....do.....	S. W.	1	S. W.	.....	.....	
	2 p. m...	25.03	0	.....	.....	.....	4	Cirro-cu., cirrus, cirro-stratus.	S. W.	1	S. W.	.....	.....	
	9 p. m...	25.00	20°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
3	9 a. m...	24.92	6°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	5 p. m...	24.76	10°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m...	24.75	10°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
4	7 a. m...	24.87	10°	.....	.....	.....	2	Stratus, cirro-stratus.....	S. W.	0	.....	.....	.....	
	3 p. m...	24.93	3	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
	9 p. m...	24.93	14°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
5	9 a. m...	24.90	5°	.....	.....	.....	0	.....	.....	1	S.	.....	.....	
	5 p. m...	24.78	+13°	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
	9 p. m...	24.72	8	.....	.....	.....	0	.....	.....	2	S.	.....	.....	
6	8 a. m...	24.70	9°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	5 p. m...	24.65	18	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m...	24.58	22	.....	.....	.....	10	Nimbus, cirrus.....	0	0	.....	.....	.....	

FOR THE WEEK ENDING DECEMBER 13, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
Dec. 7	7 a. m...	24.59	25°	.....	.....	.....	8	Cirrus, nimbus.....	S.W.	0	.....	.....	.....	Raw, disagreeable day, with occasional snow showers 0.2 in. deep.
	12½ p. m..	24.63	27°	.....	.....	.....	10	Nimbus.....	S.W.	3	S.W.	.....	.....	

	9 p. m...	24.88	13				10	....do	S.W.	4	S.W.			
8	7½ a. m..	25.07	4°				7	Nimbus, cirrus	S.W.	3	S.W.			
	2 p. m...	25.10	18				3	Cirrus	S.W.	0				
	10 p. m...	25.10	− 8°				0			0				
9	8 a. m...	25.05	−10°				0			2	N. E.			A thin frost-mist most of the day.
	1 p. m...	25.02	12°				3	Cirrus	S.W.	3	N. E.			
	9 p. m...	24.87	9				10	Nimbus	0	0				
10	7 a. m...	24.78	10°				5	Cirrus, cirro-stratus	S.W.	0				
	1 p. m...	24.80	33°				4	Cumulus, cirro-cumulus	W.	3	W.			
	9 p. m...	24.82	11°				0			0				
11	8 a. m...	24.84	6°				0			0				
	10 p. m...	25.08	0				0			0				
	9 p. m...													
12	7 a. m...	25.10	0				0			0				
	2 p. m...	25.08	32°				0			0				
	9 p. m...	25.11	17°				0			2	S.			
13	7 a. m...	25.13	17°				0			0				
	2 p. m...	25.04	31°				0			1	S.			
	9 p. m...	24.98	16°				0			0				

FOR THE WEEK ENDING DECEMBER 20, 1873.

Dec. 14	7 a. m...	24.89	22				0			1	S.			
	2 p. m...	24.89	29				3	Cirro-cumulus, cirrus	S.W.	3	S.W.			
	9 p. m...	24.84	28				6	Nimbus	S.W.	0				
15	7 a. m...	24.84	20				2	Cirrus, cirro-cum., cirro-stratus	S.W.	0				
	2 p. m...	24.87	30				3	Cirrus, cirro-cumulus	S.W.	1	S.W.			
	9 p. m...	24.77	31				7	Nimbus	S.W.	2	S.W.			
16	7 a. m...	24.83	26				0			3	S.W.			
	2 p. m...	24.79	32				2	Cirrus	S.W.	5	S.W.			
	9 p. m...	24.80	25				2	Cirrus, cirro-stratus	0	0				
17	7 a. m...	24.83	26				8	Nimbus	S.W.	0				Snowed in the morning, 0.1 inch; cleared off warm; at sundown a raw frost-mist came up.
	2 p. m...	24.98	31				5	Cirrus, cirro-cum., cirro-stratus	S.W.	2	S.W.			
	9 p. m...	25.09	24					Misty		0				
18	7 a. m...	25.22	9				1	Stratus	S.W.	2	S. E.			
	2 p. m...	25.19	31				9	Nimbus, cirro-stratus	S.W.	0				
	9 p. m...	25.15	17				7	Nimbus, cirrus	0	3	S.W.			
19	7 a. m...	25.32	15°				8	Cumulus, cirro-cumulus	S.W.	2	E.			
	2 p. m...	25.22	22				0			2	N. E.			
	9 p. m...	25.07	5				0			0				
20	7 a. m...	24.87	7				3	Cirrus	S.W.	1	S. E.			
	2 p. m...	24.82	28				0			0				
	9 p. m...	24.72	10				0			0				

Meteorological register, &c., at Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING DECEMBER 27, 1873.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1873. Dec. 21	7 a. m.	24.71	28				7	Cirrus, cirro-cumulus	S. W.	3	S. W.			A soft chenook wind.
	2 p. m.	24.73	37				10	Nimbus	S. W.	4	S. W.			
	9 p. m.	24.74	27				2	do	S. W.	3	S. W.			
22	7 a. m.	24.89	27				9	Nimbus, cirrus, cirro-stratus	S. W.	2	S. W.			
	2 p. m.	24.82	36				9	Nimbus, cirrus	S. W.	1	S. W.			
	9 p. m.	24.88	26				9	do	0	0				
23	7 a. m.	25.18	19				3	Cirrus, cirro-cum., cirro-stratus	S. W.	2	S. E.			
	2 p. m.	25.17	27				0			0				
	9 p. m.	25.17	14				5	Nimbus	S.	3	S.			
24	7 a. m.	25.08	33				9	Nimbus, cirrus	S. W.	4	S. W.			The warm chenook wind settling the snow much.
	2 p. m.	24.97	42				10	do	S. W.	5	S. W.			
	9 p. m.	24.83	34				7	do	S. W.	4	S. W.			
25	7 a. m.	24.93	33				10	do	W.	3	W.			
	2 p. m.	24.93	32				10	do	W.	2	W.			
	9 p. m.	25.06	19				1	Cumulo-stratus	S. W.	3	W.			
26	7 a. m.	25.17	13				0			1	S. E.			
	2 p. m.	25.10	30				0			0				
	9 p. m.	24.95	13				0			0				
27	7 a. m.	24.88	8°				0			0				
	2 p. m.	24.80	33				2	Cirrus, cirro-stratus	W.	1	N. W.			
	9 p. m.	24.73	21				10	Nimbus	S. W.	2	S. W.			

FOR THE WEEK ENDING JANUARY 3, 1874.

Dec. 28	7 a. m.	25.02	22				10	Nimbus		2	S. W.			Snowing from sun-up to dark, 2.5 inches.
	2 p. m.	25.08	21				10	do		3	N. E.			
	9 p. m.	25.12	14				10	do		3	N. E.			
29	7 a. m.	25.12	3				0			3	S. E.			
	2 p. m.	25.03	27				0			1	S. E.			
	9 p. m.	24.93	14				4	Cirrus, cirro-stratus	S. W.	2	S. W.			
30	7 a. m.	24.79	32				9	Nimbus, cirrus, cirro-stratus	S. W.	4	S. W.			A chenook, taking most of the snow off.

		2 p. m.	24.74	39				4	Cirrus, cirro-stratus	S. W.	2	S. W.			
		9 p. m.	24.65	35				0			3	S. W.			
	31	7 a. m.	24.05	34				0			3	S. W.			
		2 p. m.	24.09	39				3	Cirrus	S. W.	2	S. W.			
		9 p. m.	24.09	31				4	do	S. W.	0				
1874.															
Jan.	1	7 a. m.	24.55	34				3	Cirrus, cirro-cumulus	S. W.	4	S. W.			Snow nearly gone.
		2 p. m.	24.50	39				4	Cumulus and cirro-cumulus	S. W.	6	S. W.			
		9 p. m.	24.37	34				1	Stratus	S. W.	5	S. W.			
	2	7 a. m.	24.42	22				10	Nimbus		0				Snowed all day, about 4 inches.
		2 p. m.	24.42	7°				10	do		2	N. W.			
		9 p. m.	24.47	3				10	do		2	N. W.			
	3	7 a. m.	24.77	−4°				7	Nimbus, cirrus	N. W.	1	N. W.			
		2 p. m.	24.76	+4				3	Cirro-cumulus, cirrus	N. W.	0				
		9 p. m.	24.78	1				0			0				

FOR THE WEEK ENDING JANUARY 10, 1874.

Jan.	4	7 a. m.	24.78	8°				0			0				
		2 p. m.	24.78	29°				2	Cirrus, cirro-cumulus	S. W.	3	S. W.			
		9 p. m.	24.69	29				9	Nimbus	S. W.	7	S. W.			
	5	7 a. m.	24.78	27				5	Nimbus, cirro-cumulus	S. W.	2	S. W.			
		2 p. m.	24.87	30				1	Cirrus, cumulus	W.	4	W.			
		9 p. m.	24.93	17				0			2	S. W.			
	6	7 a. m.	24.92	18				2	Cirro-stratus, cirrus	W.	1	W.			
		2 p. m.													Absent; weather soft and cloudy with a raw S. W. wind.
		9 p. m.													
	7	7 a. m.													
		2 p. m.													
		9 p. m.													
	8	7 a. m.	24.78	24°				0			0				A thin mist over the whole sky.
		2 p. m.	24.87	31°				0			0				Two sun-dogs with light belts extending half around the sky at 3 p. m.
		9 p. m.	24.75	26°				0			0				
	9	7 a. m.	24.67	31°				8	Nimbus, cirrus	S. W.	1	S. W.			Warm until 6 p. m., when the wind changed to the N. W., and it began snowing; fell 1½ inch deep.
		2 p. m.	24.68	44°				7	Nimbus, cirro-cumulus	S. W.	7	S. W.			
		9 p. m.	24.80	26				10	Nimbus	N. W.	2	N. W.			
	10	7 a. m.	24.86	25°				10	do		2	S. W.			Snowing off and on all day.
		2 p. m.	24.89	27°				9	do	W.	3	W.			
		9 p. m.	24.98	20				10	do		0				

Meteorological register, &c., at Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING JANUARY 17, 1874.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1874. Jan. 11	7 a. m...	24.82	20°	.....	.....	.....	10	Nimbus, cirrus	0	0	.....	.....	.....	
	2 p. m...	24.65	28°	.....	.....	.....	10	Nimbus	.....	0	.....	.....	.....	
	9 p. m...	24.65	17°	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
12	7 a. m...	24.99	−10°	.....	.....	.....	5	Stratus, cirro-stratus	N. W.	1	N. W.	.....	.....	
	2 p. m...	25.05	0	.....	.....	.....	10	Nimbus	.....	2	S. W.	.....	.....	
	9 p. m...	25.16	−10°	.....	.....	.....	.....	Misty	.....	2	N. W.	.....	.....	
13	7 a. m...	25.22	−14°	.....	.....	.....	3	Cirro-stratus, stratus, cirrus	0	2	N. E.	.....	.....	A dense frost-mist, changing into snow that fell 1.2 inches deep.
	2 p. m...	25.18	0	.....	.....	.....	.....	Misty	.....	1	N. E.	.....	.....	
	9 p. m...	25.18	−11°	.....	.....	.....	.....	do	.....	3	N. E.	.....	.....	
14	7 a. m...	24.88	1°	.....	.....	.....	7	Nimbus, cirrus	S. W.	2	N. E.	.....	.....	Turned warm with a Chenook at 7 p. m.
	2 p. m...	24.75	12°	.....	.....	.....	4	Cirrus	S. W.	1	S. W.	.....	.....	
	9 p. m...	24.69	39°	.....	.....	.....	2	do	S. W.	4	S. W.	.....	.....	
15	7 a. m...	24.58	37	.....	.....	.....	2	Cirrus, cirro-stratus	S. W.	2	S. W.	.....	.....	
	2 p. m...	24.33	45	.....	.....	.....	5	Cirrus, cirro-cumulus	S. W.	3	S. W.	.....	.....	The warm wind took off all the snow on the bottom and table lands, except the heaviest drifts. The bottom was covered with water 1 to 3 inches deep, and even the mountains began to look bare. The ground was covered in many places with green grass an inch long.
	9 p. m...	24.29	38	.....	.....	.....	2	Cirro-stratus	S. W.	5	S. W.	.....	.....	
16	7 a. m...	24.04	38	.....	.....	.....	8	Nimbus, cirrus, cirro-stratus	S. W.	5	S. W.	.....	.....	
	2 p. m...	23.93	48	.....	.....	.....	6	Cirrus, cirro-cumulus	S. W.	6	S. W.	.....	.....	
	9 p. m...	23.89	36	.....	.....	.....	2	Nimbus	S. W.	2	S. W.	.....	.....	
17	7 a. m...	24.01	30	.....	.....	.....	1	Cumulus	S. W.	2	S. W.	.....	.....	
	2 p. m...	24.03	37	.....	.....	.....	10	Nimbus	W.	1	W.	.....	.....	Snowing from 4 to 8 p. m.; 0.1 inch.
	9 p. m...	24.12	29	.....	.....	.....	10	do	.....	2	W.	.....	.....	

FOR THE WEEK ENDING JANUARY 24, 1874.

Jan. 18	7 a. m...	24.51	0	.....	.....	.....	0	.....	.....	1	N. E.	.....	.....	
	2 p. m...	24.45	21	.....	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m...	24.33	25	.....	.....	.....	0	.....	.....	0	.....	.....	.....	

19	7 a. m.	24.34	26				1	Cumulo-stratus	0	1	S. W.			
	2 p. m.	24.28	39				5	Cirrus, cirro-stratus	S.	2	S.			
	9 p. m.	24.33	− 5				0			0				
20	7 a. m.	24.32	−11				9	Cirrus	N. W.	3	N. W.			
	2 p. m.	24.32	− 3				10	Nimbus		2	N. W.			
	9 p. m.	24.32	−12				0			0				
21	7 a. m.	24.38	−15				1	Cirro-stratus	0	1	N. W.			
	2 p. m.	24.47	− 2				4	Cirro-cumulus, cirrus	S. W.	1	S. W.			
	9 p. m.	24.50	−11				0			0				Slightly misty.
22	7 a. m.	24.52	−11				8	Nimbus, cirrus	W.	1	W.			
	2 p. m.	24.48	+ 2				2	Cirro-stratus, cirrus	W.	1	W.			
	9 p. m.	24.50	− 8				1	Cirro-cumulus	W.	1	W.			
23	7 a. m.	24.73	3				8	Nimbus, cirrus	W.	1	W.			During night 0.2 inch of snow fell.
	2 p. m.	24.76	12				3	Cirrus, cirro-cumulus	W.	0				
	9 p. m.	24.74	18				10	Nimbus	S. W.	5	S. W.			
24	7 a. m.	24.86	24				9	Nimbus, cirro-stratus	S. W.	3	S. W.			
	2 p. m.	24.87	35				8	Cirro-stratus, cirrus, stratus	S. W.	2	S. W.			
	9 p. m.	24.79	26				10	Nimbus	0	0				

FOR THE WEEK ENDING JANUARY 31, 1874.

Jan. 25	7 a. m.	24.73	34				1	Cirro-stratus	S. W.	5	S. W.			
	2 p. m.	24.68	44				9	Nimbus, cirrus, cirro-stratus	S. W.	2	S. W.			
	9 p. m.	24.52	30				3	Cirro-stratus, cirrus	0	0				
26	7 a. m.	24.52	35				7	Nimbus, cirrus, cirro-stratus	S. W.	3	S. W.			
	2 p. m.	24.47	42				10	Nimbus	S. W	3	S. W.			
	9 p. m.	24.52	35				8	Nimbus, cirrus	S. W	3	S. W.			
27	7 a. m.	24.67	30				1	Cirro-stratus	S. W.	4	S. W.			
	2 p. m.	24.64	39				8	Nimbus, cirro-cumulus, cirrus	S. W.	3	S. W.			
	9 p. m.	24.64	36				1	Cirro-stratus	0	4	S. W.			
28	7 a. m.	24.63	37				7	Cirro-stratus, cirrus, stratus	S. W.	5	S. W.			
	2 p. m.	24.67	48				9	Nimbus	S. W.	3	S. W.			
	9 p. m.	24.59	32				10	do	S. W.	1	S. W.			
29	7 a. m.	24.81	3				9	Nimbus, stratus	N. W.	1	N. W.			0.1 inch of snow fell during night.
	2 p. m.	24.79	12				2	Cirrus, cirro-stratus	0	2	N. E.			
	9 p. m.	24.75	16				10	Nimbus	0	0				
30	7 a. m.	24.73	20				7	Nimbus, cirro-stratus, cirrus	0	0				
	2 p. m.	24.69	43				8	Nimbus, cirro-cumulus, cirrus	S. W.	2	S. W.			
	8 p. m.	24.69	27				4	Cumulus, cirro-cumulus	S. W.	1	S. W.			
31	7 a. m.	24.67	20				3	Cumulus, cumulo-stratus	0	0				
	2 p. m.	24.63	40				0			0				
	9 p. m.	24.68	26				4	Cirrus, cirro-stratus	0	0				
Mean of January			20°.73											

Meteorological register from February 1, 1874, to March 7, 1874, at Trout Creek, Judith Basin, Mont.

FOR THE WEEK ENDING FEBRUARY 7, 1874.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1874.														
Feb. 1	7 a. m...	24.65	.....	27	.....	.....	5	Cirrus, cirro-cum., cirro-stratus	0	0	.....	.....	.....	
	2 p. m...	24.60	.....	39	.....	.....	4	.....do	W.	3	W.	.....	.....	
	9 p. m...	24.59	.....	30	.....	.....	10	Nimbus	.....	0	.....	.....	.....	Snowing from 7 p. m., 9. a. m. 2.2 inches.
2	7 a. m...	24.72	.....	27	.....	.....	10	.....do	.....	1	W.	.....	.....	
	2 p. m...	24.72	.....	33	.....	.....	9	Nimbus, cirro-cumulus, cirrus	S.W.	0	.....	.....	.....	
	9 p. m...	24.71	.....	17	.....	.....	3	Cirro-cumulus, cirrus	0	0	.....	.....	.....	
3	7 a. m...	24.63	.....	8	.....	.....	0	.....	.....	3	S. E.	.....	.....	
	2 p. m...	24.62	.....	34	.....	.....	3	Cirro-stratus, cirrus	0	0	.....	.....	.....	
	9 p. m...	24.63	.....	16	.....	.....	3	Nimbus, cirrus	S.W.	2	S.W.	.....	.....	
4	7 a. m...	24.67	.....	16	.....	.....	9	Nimbus, cirro-stratus	S. E.	2	S. E.	.....	.....	
	2 p. m...	24.68	.....	37	.....	.....	8	Nim., cirrus, cirro-strat., cirro-cum.	N. W.	2	N. W.	.....	.....	
	9 p. m...	24.69	.....	27	.....	.....	10	Nimbus	0	0	.....	.....	.....	
5	7 a. m...	24.72	.....	23	.....	.....	4	Cirro-stratus, stratus, cirrus	S. E.	4	S.W.	.....	.....	
	2 p. m...	24.70	.....	39	.....	.....	2	Cirro-cumulus	W.	2	W.	.....	.....	
	9 p. m...	24.62	.....	23	.....	.....	2	Cumulo-stratus	0	0	.....	.....	.....	
6	7 a. m ..	24.48	.....	39	.....	.....	9	Nimbus, cirrus, cirro-stratus	S.W.	5	S.W.	.....	.....	A chenook took all the snow off.
	2 p. m...	24.35	.....	45	.....	.....	8	Nimbus, cirro-stratus, cirrus	S.W.	3	S.W.	.....	.....	
	9 p. m...	24.20	.....	39	.....	.....	3	Cirrus, cirro-stratus	S.W.	5	S.W.	.....	.....	
7	7 a. m...	24.46	.....	21	.....	.....	3	Cirro-stratus, cirrus, cirro-cum.	S.W.	1	S.W.	.....	.....	Several hail-showers in the afternoon.
	2 p. m...	24.48	.....	33	.....	.....	7	Cirro-cumulus, nimbus, cum...	N. W.	5	N. W.	.....	.....	
	9 p. m...	24.62	.....	25	.....	.....	2	Cirro-stratus	0	0	.....	.....	.....	

FOR THE WEEK ENDING FEBRUARY 14, 1874.

Feb. 8	7 a. m...	24.75	.....	15	.....	.....	2	Cirrus, cirro-stratus	W.	2	S. E.	.....	.....	
	2 p. m...	24.68	.....	39	.....	.....	0	.....	.....	6	S.W.	.....	.....	
	9 p. m...	24.63	.....	35	.....	.....	0	.....	.....	4	S.W.	.....	.....	
9	7 a. m...	24.59	.....	34	.....	.....	7	Cirrus, cirro-stratus	S. W.	3	S.W.	.....	.....	
	2 p. m...	24.52	.....	45	.....	.....	8	Nimbus, cirrus, cirro-stratus	S. W.	4	S.W.	.....	.....	
	9 p. m...	24.48	.....	34	.....	.....	0	.....	.....	4	S.W.	.....	.....	
10	7 a. m...	24.45	.....	35	.....	.....	6	Cirrus, cirro-cum., cirro-strat..	S. W.	4	S.W.	.....	.....	

	2 p. m...	24.24	.....	48	.....	.....	9	Nimbus, cirro-cumulus, cumulo-stratus, cirro-stratus.	S. W.	4	S.W.	.....	.....	
	9 p. m...	24.16	.....	37	.....	.....	10	Nimbus	S. W.	1	S.W.	.....	.....	
11	7 a. m...	24.13	.....	9	.....	.....	10	do	.....	3	W.	.....	.....	Snowing 6·7 a. m., 0.1 inch.
	2 p. m...	24.10	.....	11	.....	.....	2	Cirrus, cirro-cumulus	W.	3	W.	.....	.....	
	9 p. m...	24.08	.....	12	.....	.....	...	Slightly misty	.....	0	.....	.....	.....	
12	7 a m...	24.06	.....	3	.....	.....	1	Cirro-stratus	S. W.	1	S.	.....	.....	
	2 p. m...	24.99	.....	20	.....	.....	4	Cirro-cumulus, cumulus-strat., cirro-stratus.	N.W.	2	N. W.	.....	.....	
	9 p. m...	24.03	.....	9	.....	.....	10	Nimbus	.....	1	S.W.	.....	.....	A few snow-flakes fell at 3 p. m.
13	7 a. m...	24.24	.....	3	.....	.....	10	do	.....	0	.....	.....	.....	Snowing 10–12 a. m., and 3–8 p. m. 0.2 inch.
	2 p. m...	24.24	.....	14	.....	.....	8	Nimbus, cirro-cumulus	N.	2	S.	.....	.....	
	9 p. m...	24.30	.....	4	.....	.....	...	Slighty misty	.....	2	N. W.	.....	.....	
14	7 a. m...	24.23	.....	0	.....	.....	4	Cirro-stratus, cirrus, stratus	W.	1	N. E.	.....	.....	
	2 p. m...	24.12	.....	32	.....	.....	8	Nimbus, cirro-cumulus	S. W.	5	S.W.	.....	.....	
	9 p. m...	24.17	.....	24	.....	.....	0	.....	.....	6	S.W.	.....	.....	

FOR THE WEEK ENDING FEBRUARY 21, 1874.

Feb. 15	7 a. m...	24.37	.....	24	.....	.....	0	.....	.....	4	S.W.	.....	.....	
	2 p. m...	24.32	.....	40	.....	.....	1	Cumulo-stratus	S.W.	4	S.W.	.....	.....	
	9 p. m...	24.43	.....	23	.....	.....	0	.....	.....	0	.....	.....	.....	
16	7 a. m...	24.42	.....	14	.....	.....	1	Cirro-stratus	0	2	S. E.	.....	.....	
	2 p. m...	24.32	.....	47	.....	.....	1	Cirrus, cirro-stratus	S.W.	4	S.W.	.....	.....	
	9 p. m...	24.28	.....	29	.....	.....	0	.....	.....	0	.....	.....	.....	
17	7 a. m...	24.23	.....	33	.....	.....	2	Stratus, cirrus, cirro-stratus	S.W.	4	S.W.	.....	.....	
	2 p. m...	24.14	.....	42	.....	.....	6	Cirro-cum., cirrus, cirro-stratus	S.W.	4	S.W.	.....	.....	
	9 p. m...	24.08	.....	37	.....	.....	10	Nimbus	.....	4	S.W.	.....	.....	
18	7 a. m ..	24.08	.....	24	.....	.....	9	Nimbus, cirro-cumulus	S.W.	1	S.W.	.....	.....	Snowing, 8 a. m. to 8 p. m., off and on; 0.2 inch.
	2 p. m...	24.19	.....	29	.....	.....	10	Nimbus	.....	3	S.W.	.....	.....	
	9 p. m...	24.49	.....	11	.....	.....	10	do	.....	2	S.W.	.....	.....	
19	7 a. m...	24.40	.....	16	.....	.....	0	.....	.....	3	S.W.	.....	.....	
	2 p. m...	24.29	.....	40	.....	.....	3	Cirro-stratus, cirro-cumulus	S.W.	3	S.W.	.....	.....	
	9 p. m...	24.29	.....	32	.....	.....	10	Nimbus	.....	5	S.W.	.....	.....	
20	7 a. m...	24.62	.....	16	.....	.....	10	do	.....	2	N. W.	.....	.....	Blowing a very hard gale during the night, and snowing 11 a. m; 1.5 inch.
	2 p. m...	24.77	.....	15	.....	.....	10	do	.....	2	N. W.	.....	.....	
	9 p. m...	24.78	.....	— 3	.....	.....	0	.....	.....	0	.....	.....	.....	Cleared off at 4 p. m.
21	7 a. m...	24.67	.....	— 5	.....	.....	5	Cirro-stratus, cirrus	0	1	S. E.	.....	.....	
	2 p. m...	24.59	.....	23	.....	.....	2	Cumulus, cirro-cumulus	N. W.	2	N. W.	.....	.....	
	9 p. m...	24.65	.....	10	.....	.....	1	Cirro-stratus	0	0	.....	.....	.....	

Meteorological record, &c., at Trout Creek, Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING FEBRUARY 28, 1874.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	Clouds. Amount.	Clouds. Kind.	Clouds. Direct'n from.	Wind. Amount.	Wind. Direction.	Maximum.	Minimum.	Remarks.
1874. Feb. 22	7 a. m.	24.91	.....	2	.....	.....	10	Nimbus	.....	4	N. W.	.....	.....	Snowing through night; 8 a. m., 0.2 inch.
	2 p. m.	24.91	.....	5	.....	.....	4	Cirrus, cirro-stratus	N. W.	1	N. W.	.....	.....	
	9 p. m.	24.92	.....	−7	.....	.....	0	.....	.....	0	.....	.....	.....	
23	7 a. m.	24.93	.....	−14	.....	.....	0	.....	.....	1	N. W.	.....	.....	
	2 p. m.	24.87	.....	0	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m.	24.85	.....	−16	.....	.....	0	.....	.....	0	.....	.....	.....	
24	7 a. m.	24.74	.....	−17	.....	.....	0	.....	.....	2	S. E.	.....	.....	
	2 p. m.	24.63	.....	12	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m.	24.54	.....	2	.....	.....	5	Cirrus	S.W.	2	S.W.	.....	.....	
25	7 a. m.	24.52	.....	11	.....	.....	10	Nimbus	.....	2	S.W.	.....	.....	
	2 p. m.	24.48	.....	21	.....	.....	0	.....	.....	3	W.	.....	.....	
	9 p. m.	24.43	.....	1	.....	.....	0	.....	.....	0	.....	.....	.....	
26	7 a. m.	24.37	.....	18	.....	.....	1	Cirro-stratus	S.W.	5	S.W.	.....	.....	Faint aurora borealis between 8 and 9 p. m.; white streamer rising from a cloud back in the north, about 35°.
	2 p. m.	24.38	.....	35	.....	.....	7	Nimbus, cirro-cumulus	S.W.	4	S.W.	.....	.....	
	9 p. m.	24.38	.....	27	.....	.....	3	Cirro-stratus, cirrus	S.W.	4	S.W.	.....	.....	
27	7 a. m.	24.53	.....	31	.....	.....	9	Nimbus, cirro-stratus	S.W.	1	S.W.	.....	.....	
	2 p. m.	24.46	.....	49	.....	.....	2	Cirro-stratus, cirrus	S.W.	2	S.W.	.....	.....	
	9 p. m.	24.42	.....	40	.....	.....	4	Cirro-cum., cirro-stratus, cirrus	S.W.	6	S.W.	.....	.....	
28	7 a. m.	24.49	.....	37	.....	.....	2	Cirro-stratus, cirrus	S.W.	3	S.W.	.....	.....	The mean temperature of the month is 22°.42.
	2 p. m.	24.46	.....	49	.....	.....	2	do	S.W.	4	S.W.	.....	.....	
	9 p. m.	24.40	.....	39	.....	.....	8	Cirrus, cirro-stratus	S.W.	5	S.W.	.....	.....	

FOR THE WEEK ENDING MARCH 7, 1874.

Mar. 1	7 a. m.	24.18	.....	40	.....	.....	9	Nimbus, cirro-stratus	S.W.	6	S.W.	.....	.....	About 5.30 p. m., a terrible squall of wind and snow came up from W., lasted about one hour, with 0.2 inch snow.
	2 p. m.	24.03	.....	51	.....	.....	4	Cirro-cumulus	S.W.	8	S.W.	.....	.....	
	9 p. m.	24.09	.....	27	.....	.....	9	Nimbus, cirrus	S.W.	1	S.W.	.....	.....	

2	7 a. m.	24.22	.....	24	.....	.....	0	.....	.....	3	S.W.	.....	.....	
	2 p. m.	24.28	.....	19	.....	.....	8	Nimbus, cirro-cumulus	N. W.	2	N. W.	.....	.....	
	9 p. m.	23.73	.....	4	.....	.....	10	Nimbus	.....	4	N. W.	.....	.....	
3	7 a. m.	23.70	.....	1	.....	.....	10	do	.....	3	N. E.	.....	.....	
	2 p. m.	23.66	.....	10	.....	.....	9	Nimbus, cirro-stratus	N. E.	2	N. E.	.....	.....	
	9 p. m.	23.62	.....	10	.....	.....	10	Nimbus	.....	0	.....	.....	.....	
4	7 a. m.	23.62	.....	2	.....	.....	5	Nimbus, cirrus, cirro-stratus	N.	2	S. E.	.....	.....	
	2 p. m.	23.54	.....	31	.....	.....	7	Cirro-cumulus, cirro-stratus	W.	2	W.	.....	.....	
	9 p. m.	23.55	.....	21	.....	.....	4	Nimbus, cirro-cumulus	S.W.	0	.....	.....	.....	
5	7 a. m.	23.48	.....	17	.....	.....	2	Nimbus, cirro-stratus	S.W.	1	S.W.	.....	.....	
	2 p. m.	23.47	.....	31	.....	.....	4	Cirro-cum., cirrus	W.	2	W.	.....	.....	
	9 p. m.	23.62	.....	8	.....	.....	1	Cirro-stratus	N. W.	2	N. W.	.....	.....	
6	7 a. m.	23.77	.....	7	.....	.....	10	Nimbus	0	0	.....	.....	.....	Snowing slightly 7 to 8 a. m.
	2 p. m.	23.74	.....	22	.....	.....	8	Nimbus, cirro-stratus	N. E.	2	N. E.	.....	.....	
	9 p. m.	23.77	.....	12	.....	.....	0	.....	.....	0	.....	.....	.....	
7	7 a. m.	23.82	.....	10	.....	.....	2	Cirro-stratus	N. W.	2	N. E.	.....	.....	
	2 p. m.	23.78	.....	31	.....	.....	6	Nimbus, cirro-stratus, cirro-cu.	E.	1	E.	.....	.....	
	9 p. m.	23.80	.....	19	.....	.....	6	Nimbus	N. E.	7	N. E.	.....	.....	

Meteorological record, &c., at Trout Creek, Judith Basin, Mont.—Continued.

FOR THE WEEK ENDING FEBRUARY 28, 1874.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
1874. Feb. 22	7 a. m.	24.91	.....	2	.....	.....	10	Nimbus	.....	4	N. W.	.....	.....	Snowing through night; 8 a. m., 0.2 inch.
	2 p. m.	24.91	.....	5	.....	.....	4	Cirrus, cirro-stratus	N. W.	1	N. W.	.....	.....	
	9 p. m.	24.92	.....	−7	.....	.....	0	.....	.....	0	.....	.....	.....	
23	7 a. m.	24.93	.....	−14	.....	.....	0	.....	.....	1	N. W.	.....	.....	
	2 p. m.	24.87	.....	0	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m.	24.85	.....	−16	.....	.....	0	.....	.....	0	.....	.....	.....	
24	7 a. m.	24.74	.....	−17	.....	.....	0	.....	.....	2	S. E.	.....	.....	
	2 p. m.	24.63	.....	12	.....	.....	0	.....	.....	0	.....	.....	.....	
	9 p. m.	24.54	.....	2	.....	.....	5	Cirrus	S.W.	2	S.W.	.....	.....	
25	7 a. m.	24.52	.....	11	.....	.....	10	Nimbus	.....	2	S.W.	.....	.....	
	2 p. m.	24.48	.....	21	.....	.....	0	.....	.....	3	W.	.....	.....	
	9 p. m.	24.43	.....	1	.....	.....	0	.....	.....	0	.....	.....	.....	
26	7 a. m.	24.37	.....	18	.....	.....	1	Cirro-stratus	S.W.	5	S.W.	.....	.....	Faint aurora borealis between 8 and 9 p. m.; white streamer rising from a cloud back in the north, about 35°.
	2 p. m.	24.38	.....	35	.....	.....	7	Nimbus, cirro-cumulus	S.W.	4	S.W.	.....	.....	
	9 p. m.	24.38	.....	27	.....	.....	3	Cirro-stratus, cirrus	S.W.	4	S.W.	.....	.....	
27	7 a. m.	24.53	.....	31	.....	.....	9	Nimbus, cirro-stratus	S.W.	1	S.W.	.....	.....	
	2 p. m.	24.46	.....	49	.....	.....	2	Cirro-stratus, cirrus	S.W.	2	S.W.	.....	.....	
	9 p. m.	24.42	.....	40	.....	.....	4	Cirro-cum., cirro-stratus, cirrus	S.W.	6	S.W.	.....	.....	
28	7 a. m.	24.49	.....	37	.....	.....	2	Cirro-stratus, cirrus	S.W.	3	S.W.	.....	.....	The mean temperature of the month is 22°.42.
	2 p. m.	24.46	.....	49	.....	.....	2	do	S.W.	4	S.W.	.....	.....	
	9 p. m.	24.40	.....	39	.....	.....	8	Cirrus, cirro-stratus	S.W.	5	S.W.	.....	.....	

FOR THE WEEK ENDING MARCH 7, 1874.

Date.	Time.	Barometer.	Attached thermometer.	Dry bulb.	Wet bulb.	Relative humidity.	CLOUDS. Amount.	CLOUDS. Kind.	CLOUDS. Direct'n from.	WIND. Amount.	WIND. Direction.	Maximum.	Minimum.	Remarks.
Mar. 1	7 a. m.	24.18	.....	40	.....	.....	9	Nimbus, cirro-stratus	S.W.	6	S.W.	.....	.....	About 5.30 p. m., a terrible squall of wind and snow came up from W., lasted about one hour, with 0.2 inch snow.
	2 p. m.	24.03	.....	51	.....	.....	4	Cirro-cumulus	S.W.	8	S.W.	.....	.....	
	9 p. m.	24.09	.....	27	.....	.....	9	Nimbus, cirrus	S.W.	1	S.W.	.....	.....	

2	7 a. m.	24.22	.....	24	.....	.....	0	.....	.....	3	S.W.	.....	.....	
	2 p. m.	24.28	.....	19	.....	.....	8	Nimbus, cirro-cumulus	N. W.	2	N. W.	.....	.....	
	9 p. m.	23.73	.....	4	.....	.....	10	Nimbus	.....	4	N. W.	.....	.....	
3	7 a. m.	23.70	.....	1	.....	.....	10	do	.....	3	N. E.	.....	.....	
	2 p. m.	23.66	.....	10	.....	.....	9	Nimbus, cirro-stratus	N. E.	2	N. E.	.....	.....	
	9 p. m.	23.62	.....	10	.....	.....	10	Nimbus	.....	0	.....	.....	.....	
4	7 a. m.	23.62	.....	2	.....	.....	5	Nimbus, cirrus, cirro-stratus	N.	2	S. E.	.....	.....	
	2 p. m.	23.54	.....	31	.....	.....	7	Cirro-cumulus, cirro-stratus	W.	2	W.	.....	.....	
	9 p. m.	23.55	.....	21	.....	.....	4	Nimbus, cirro-cumulus	S.W.	0	.....	.....	.....	
5	7 a. m.	23.48	.....	17	.....	.....	2	Nimbus, cirro-stratus	S.W.	1	S.W.	.....	.....	
	2 p. m.	23.47	.....	31	.....	.....	4	Cirro-cum., cirrus	W.	2	W.	.....	.....	
	9 p. m.	23.62	.....	8	.....	.....	1	Cirro-stratus	N. W.	2	N. W.	.....	.....	
6	7 a. m.	23.77	.....	7	.....	.....	10	Nimbus	0	0	.....	.....	.....	Snowing slightly 7 to 8 a. m.
	2 p. m.	23.74	.....	22	.....	.....	8	Nimbus, cirro-stratus	N. E.	2	N. E.	.....	.....	
	9 p. m.	23.77	.....	12	.....	.....	0	.....	.....	0	.....	.....	.....	
7	7 a. m.	23.82	.....	10	.....	.....	2	Cirro-stratus	N. W.	2	N. E.	.....	.....	
	2 p. m.	23.78	.....	31	.....	.....	6	Nimbus, cirro-stratus, cirro-cu.	E.	1	E.	.....	.....	
	9 p. m.	23.80	.....	19	.....	.....	6	Nimbus	N. E.	7	N. E.	.....	.....	

Meteorological register at summit of Mount Lincoln, Colorado.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
July 21	7 a. m...	18.040	51.5	38	.35		34.5						
	2 p. m...	18.018	54.4	40	.34								
	9 p. m...	18.010	42.5	37	.62	41							
22	7 a. m...	18.044	54.5	42	.40		34			3	N. N. W.	2	
	2 p. m...	18.074	51.5	38	.35					10		4	
	9 p. m...	18.098	39.5	37	.83	72				5	S. S. E.	1	
23	7 a. m...	18.116	49.0	39	.45		34			0			
	2 p. m...	18.143	54.0	42.5	.40					4		0	
	9 p. m...	18.137	41.0	38	.77	74				1	W.	2	
24	7 a. m...	18.137	50	39	.41		35			1	W.	2	
	2 p. m...	18.127	36.5	35.5	.91					7	S. E.	10	
	9 p. m...	18.111	37	35	.83	69				0			
25	7 a. m...	18.061	48.5	40	.52		31			2	S. W.	2	
	2 p. m...	18.045	48.5	39.5	.48					4	N. W.	1	
	9 p. m...	18.055	36.5	34	.82	59				0			
26	7 a. m...	18.025	42	32.5	.40		29			6	N.	6	
	2 p. m...	18.041	47	37.5	.43					3	S. W.	3	
	9 p. m...	18.031	36.5	30.5	.53	56				1	N. W.	1	
27	7 a. m...	18.003	51.5	37.5	.32		29.5			1	N. W.	2	
	2 p. m...	18.010	45.5	34.5	.38					7	S. E.	5	
	9 p. m...	18.024	37	33	.68	64.5				0			
28	7 a. m...	17.995	49	38.5	.41		28			0	W.	3	
	2 p. m...	17.993	48.5	35.5	.33					4	N. E.	4	
	9 p. m...	18.001	35.5	30.5	.58	61				2	N. W.	5	
29	7 a. m...	17.963	47	36	.39		26			1	N.	6	
	2 p. m...	17.974	47.5	37	.43					6	N. W.	2	
	9 p. m...	17.975	36.5	32	.67	69				0			
30	7 a. m...	17.929	53.5	38	.31		31			2	W.	3	
	2 p. m ...	17.930	50.5	39.5	.41					3	S. W.	1	
	9 p. m...	17.948	36.5	32	.67	65				2	N. W.	8	
31	7 a. m...	17.717	41	32.5	.47		31.5			0			
	2 p. m...	17.980	57	41	.31					4	S. W.	2	
	9 p. m...	17.974	37	30.5	.49	59.5				0			
Aug. 1	7 a. m...	17.982	51	38.5	.35		30			2	W.	3	
	2 p. m...	18.017	39.5	34	.63					8	S. E.	6	A very severe snow-storm.
	9 p. m...	18.020	33	32	.89	76				7	S. W.	10	Still snowing.
2	7 a. m...	18.014	59	45	.37		29			3		1	
	2 p. m...	18.011	37.5	33	.68					0			
	9 p. m...	18.029	37	34	.74	66				0			

3	7 a. m...	18.016	56	39	.28	.....	29	.....	.....	2	.....	3	
	2 p. m...	18.027	52	37	.30	.....	.....	.....	.....	1	.....	2	
	9 p. m...	18.005	35	32.5	.73	74	.....	.....	.....	4	S. E.	5	
4	7 a. m...	17.971	41	29.5	.31	.....	32.5	.....	.....	3	S. E.	8	
	2 p. m...	17.955	50	38	.38	.....	.....	.....	.....	10	W.	10	Rain and snow with heavy fog in the valleys.
	9 p. m...	17.966	39	37	.83	64.5	.....	.....	.....	5	S. W.	2	
5	7 a. m...	17.933	36	35	.91	.....	30	.....	.....	4	N. W.	10	
	2 p. m...	18.037	52	42	.46	.....	.....	.....	.....	0	.....	....	
	9 p. m...	18.045	37.5	33.5	.68	53.5	.....	.....	.....	0	.....	....	
6	7 a. m...	18.050	52	40.5	.39	.....	31	.....	.....	2	W.	1	
	2 p. m...	18.060	48	42	.62	.....	.....	.....	.....	6	S. W.	2	
	9 p. m...	18.027	38	35	.76	67	.....	.....	.....	0	.....	....	
7	7 a. m...	17.986	54	42	.40	.....	33	.....	.....	2	E.	1	A severe snow-storm at 1.30 p. m. to 3 p. m., attended by a strong electric current.
	2 p. m...	17.984	49	39	.45	.....	.....	.....	.....	10	.....	3	
	9 p. m...	17.972	38	35	.76	47	.....	.....	.....	4	.....	1	
8	7 a. m...	17.970	50	38.5	.38	.....	32	.....	.....	2	.....	0	
	2 p. m...	17.993	38.5	38	.91	.....	.....	.....	.....	4	E.	10	
	9 p. m...	17.995	36	35	.91	71	.....	.....	.....	3	S. E.	6	
9	7 a. m...	18.006	35.5	33	.81	.....	34	.....	.....	5	S. E.	10	
	2 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	9 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
10	7 a. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	2 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	9 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
11	7 a. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	2 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	9 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
12	7 a. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
	2 p. m...	18.004	47.5	40	.57	.....	.....	.....	.....	8	S. W.	3	
	9 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....	
13	7 a. m...	18.030	53.5	43	.47	.....	33	.....	.....	2	.....	0	
	2 p. m...	18.033	47.5	41.5	.61	.....	.....	.....	.....	8	W.	2	
	9 p. m...	18.052	35	34	.90	57	.....	.....	.....	10	.....	5	Electric current very strong.
14	7 a. m...	18.030	42.5	39	.77	.....	32.5	.....	.....	0	.....	0	
	2 p. m...	18.038	44.0	42	.85	.....	.....	.....	.....	10	S. E.	3	
	9 p. m...	18.043	37.5	36.5	.91	68	.....	.....	.....	10	E.	4	
15	7 a. m...	18.030	34.5	34	.90	.....	31	.....	.....	10	S. E.	2	
	2 p. m...	18.016	45	42	.78	.....	.....	.....	.....	10	S.W.	4	
	9 p. m...	18.012	36	35.5	.91	49	.....	.....	.....	10	N. E.	5	
16	7 a. m...	17.958	38	34	.69	.....	30.5	.....	.....	5	S. E.	8	
	2 p. m...	17.968	43	39	.71	.....	.....	.....	.....	8	S.W.	5	
	9 p. m...	17.981	34	32	.80	45	.....	.....	.....	3	N.	6	
17	7 a. m...	17.987	44	37	.55	.....	28.5	.....	.....	4	W.	3	
	2 p. m...	18.026	47	39	.52	.....	.....	.....	.....	2	S.W.	2	
	9 p. m...	18.049	35	31.5	.65	56.5	.....	.....	.....	0	N. W.	6	
18	7 a. m...	18.033	41	34	.53	.....	31	.....	.....	4	N. W.	8	
	2 p. m...	18.059	44	36	.50	.....	.....	.....	.....	5	W.	6	
	9 p. m...	18.076	36.5	31	.60	56	.....	.....	.....	0	W.	1	
19	7 a. m...	18.047	50	39	.41	.....	30	.....	.....	3	N. W.	4	
	2 p. m...	18.073	47	37	.43	.....	.....	.....	.....	7	W.	5	Snow-storm.
	9 p. m...	18.017	34	32	.80	61	.....	.....	.....	4	N. W.	6	

Meteorological register at summit of Mount Lincoln, Colorado—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Aug. 20	7 a. m...	17.970	45	37	.50	.....	29.5	.....	.....	2	S.W.	3	
	2 p. m...	17.972	50	36	.32	.....	.....	.....	.....	5	N.W.	2	
	9 p. m...	17.959	35	31	.65	49.5	.....	.....	.....	8	N.E.	10	
21	7 a. m...	17.961	51.5	40.5	.42	.....	29	.....	.....	3	W.	1	
	2 p. m...	17.964	50	40	.45	.....	.....	.....	.....	6	S.E.	8	
	9 p. m...	17.910	39	33	.57	79.5	.....	.....	.....	8	S.E.	10	
22	7 a. m...	17.914	35	32	.73	.....	31.5	.....	5	3	S.W.	4	
	2 p. m...	17.901	43	39	.71	.....	.....	.....	.....	6	N.	3	
	9 p. m...	17.909	37	35	.83	79	.....	.....	.....	5	N.W.	4	
23	7 a. m...	17.931	33.5	31	.71	.....	30.5	.....	.....	10	.....	0	Very dense fog.
	2 p. m...	17.971	50	33	.24	.....	.....	.....	.....	4	W.	2	
	9 p. m...	17.998	38.5	36	.83	53	.....	.....	.....	10	S.W.	3	
24	7 a. m...	17.992	48.5	45	.79	.....	28.5	.....	.....	5	N.W.	2	
	2 p. m...	17.988	48	40	.52	.....	.....	.....	.....	3	W.	3	
	9 p. m...	17.999	34.5	31	.71	75.5	.....	.....	.....	2	S.W.	4	
25	7 a. m...	17.955	39	35.5	.69	.....	28.5	.....	.....	3	N.W.	8	
	2 p. m...	17.986	52	39.5	.36	.....	.....	.....	.....	4	S.W.	3	
	9 p. m...	18.002	37	33	.68	57	.....	.....	.....	3	.....	0	
26	7 a. m...	18.018	48	44.5	.73	.....	31	.....	.....	2	E.	2	
	2 p. m...	18.034	54.5	38	.29	.....	.....	.....	.....	2	.....	0	
	9 p. m...	18.031	41.5	34	.53	76.5	.....	.....	.....	0	E.	3	
27	7 a. m...	18.017	53	41	.40	.....	34	.....	.....	4	S.W.	4	
	2 p. m...	18.039	60	43	.30	.....	.....	.....	.....	3	W.	2	
	9 p. m...	18.033	45.5	36	.46	78	.....	.....	.....	2	E.	3	
28	7 a. m...	18.054	52	43	.50	.....	33.5	.....	.....	3	S.E.	1	
	2 p. m...	18.072	52	39.5	.36	.....	.....	.....	.....	0	.....		
	9 p. m...	18.084	40	37	.77	78.5	.....	.....	.....	4	S.W.	2	
29	7 a. m...	18.058	52	41	.43	.....	32.5	.....	.....	3	N.W.	3	
	2 p. m...	18.067	38.5	34.5	.33	.....	.....	.....	.....	6	S.W.	5	
	9 p. m...	18.042	37	34	.75	39.5	.....	.....	.....	10	W.	3	Snow-storm from 7.00 p. m. till 10.00 p. m.
30	7 a. m...	18.062	45	40	.66	.....	32	.....	.....	5	N.W.	10	
	2 p. m...	18.098	57	46	.45	.....	.....	.....	.....	4	N.W.	1	
	9 p. m...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
31	7 a. m...	18.047	55	45	.48	.....	31	.....	.....	1	N.W.	2	
	2 p. m...	18.034	48	38	.44	.....	.....	.....	.....	5	S.W.	3	
	9 p. m...	18.019	35	32	.73	70.5	.....	.....	.....	10	S.E.	1	
Sept. 1	7 a. m...	18.008	37	31	.55	.....	30.5	.....	.....	7	N.W.	2	
	2 p. m...	17.977	48	41.5	.57	.....	.....	.....	.....	6	W.	2	
	9 p. m...	17.980	37	33.5	.68	65.5	.....	.....	.....	3	S.W.	4	

2	7 a. m...	17.912	40.5	35	.63		28.5			2	N. W.	8	
	2 p. m...	17.912	51.5	42	.50					0		0	
	9 p. m...	17.907	37.5	32.5	.61	52.5				0	N. W.	5	
3	7 a. m...	17.844	40	34.5	.58		28.5			7	W.	8	
	2 p. m...	17.872	44	36	.50					4	S. W.	5	
	9 p. m...	17.928	33.5	30	.68	44.5				3	N.	2	
4	7 a. m...	17.904	39	33.5	.57		26			4	N. W.	6	
	2 p. m...	17.943	42.5	33.5	.44					3	S. W.	5	
	9 p. m...	18.014	33.5	30.5	.68	48				1	W.	4	
5	7 a. m...	17.980	44.5	34.5	.41		27.5			2	N. W.	4	
	2 p. m...	18.016	43	35	.49					5	N. W.	2	
	9 p. m...	18.070	33	29	.56	71				0		0	
6	7 a. m...	18.049	30	27	.58		24.5			10	S. E.	8	Snowing.
	2 p. m...	18.067	40.5	35.5	.63					4	N. W.	3	
	9 p. m...	18.066	38	32	.56	42				10	S. E.	4	Snow.
7	7 a. m...	18.066	34	30	.63		25			10	S. E.	4	
	2 p. m...	18.029	37	34	.75					8	N. E.	4	Snowing.
	9 p. m...	18.014	32.5	29	.66	40.5				10	N. W.	5	
8	7 a. m...	17.987	32	30	.76		24.5			5	N.	2	
	2 p. m...	18.004	38	33	.62					6	S. W.	3	
	9 p. m...	18.001	31	30	.86	39.5				0		0	
9	7 a. m...	17.972	45	34	.38		23.5			2	W.	1	
	2 p. m...	17.986	48	37	.40					1	S. W.	3	
	9 p. m ..	17.987	34	28	.49	57.5				2	S. E.	4	
10	7 a. m...	17.967	39	30.5	.41		27			3	S. W.	2	
	2 p. m...	17.930	41	36	.64					2	W.	3	
	9 p. m...	17.928	33	28	.52	48				4	N. E.	4	
11	7 a. m...	17.896	28				26			8	N.	7	
	2 p. m...	17.921	36	32	.67					6	N.	8	
	9 p. m...	17.949	29.5	26	.54	38				5	N. E.	10	
12	7 a. m...	17.959	36	30	.53		24.5			0	N. W.	4	
	2 p. m...	17.990	45	34	.38					3	S. W.	2	
	9 p. m...	17.999	32.5	28.5	.56	45.5				0	N.	4	
13	7 a. m...	17.945	35.5	30	.58		25.5			3	N. W.	5	
	2 p. m...	17.981	44	34.5	.41					2	N. W.	6	
	9 p. m...	17.979	32	26	.42	46.5				0	N.	8	
14	7 a. m...	17.952	41	30.5	.35		27.5			3	N. W.	6	
	2 p. m...	17.991	50	35	.29					1	N. W.	4	
	9 p. m...	18.028	37.5	29	.44	50				0	N.	3	
15	7 a. m...	18.018	46	34	.35		27			2	N.	1	
	2 p. m...	18.045	50	38	.38					4	W.	2	
	9 p. m...	18.060	38.5	29	.40	69				2	N.	2	
16	7 a. m...	18.004	38	29.5	.40		29.5			3	N. W.	4	
	2 p. m...	17.991	54	37	.26					6	N. W.	4	
	9 p. m...	17.922	38.5	28.5	.36	58.5				1	N.	5	
17	7 a. m...	17.825	38	32	.56		28.5			2	N. W.	6	
	2 p. m...	17.874	44.5	31	.31					6	W.	7	
	9 p. m...	17.877	35.5	32.5	.73	47.5				8	N. W.	8	
18	7 a. m...	17.855	35	28	.46		25.5			2	N. W.	6	
	2 p. m...	17.889	43	30	.30					4	W.	3	
	9 p. m...	17.911	34	25		49.5				5	W.	6	
19	7 a. m...	17.815	29	28	.82		26			10	S. W.	2	

Meteorological register at summit of Mount Lincoln, Colorado—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Sept. 19	2 p. m.	17.735	29.5							10	W.	5	
	9 p. m.	17.779	25.5	24	.75	39.5				0	N. W.	8	
20	7 a. m.	17.759	24	22	.54		21.5			3	N. W.	8	
	2 p. m.	17.765	29	26	.54					7	W.	9	
	9 p. m.	17.823	25.5	23	.51	34				2	W.	7	
21	7 a. m.	17.760	27.5	24	.43		20.5			1	N. W.	9	
	2 p. m.	17.823	37	32	.61					2	W.	3	
	9 p. m.	17.863	27	23	.36	31.5				3	N. W.	4	
22	7 a. m.	17.803	28	22	.25		19			1	N. W.	9	
	2 p. m.	17.845	38	26.5						2	W.	4	
	9 p. m.	17.894	26.5	22	.30	29.5				2	N.	6	
23	7 a. m.	17.799	32	27	.48		23.5			1	N. W.	8	
	2 p. m.	17.783	42.5	30	.31					2	N.	5	
	9 p. m.	17.791	30.5	26.5	.48	42.5				0	N.	6	
24	7 a. m.	17.698	27.5	23.5	.36		22.5			4	N.	9	
	2 p. m.	17.724	43.5	32.5	.37					4	N.	5	
	9 p. m.	17.733	30.5	25	.40	43.5				0	N.	7	
25	7 a. m.	17.653	33.5	27	.44		26			3	N.	8	
	2 p. m.	17.680	46.5	30.5	.24					4	N.	4	
	9 p. m.	17.659	35.5	29	.52	47.5				0	N. W.	4	
26	7 a. m.	17.635	37.5	31	.55		27.5			2	W.	5	
	2 p. m.	17.686	48.5	33	.27					2	W.	3	
	9 p. m.	17.728	37	26.5		47				0	W.	4	
27	7 a. m.	17.666	39	32.5	.51		29			1	S. W.	9	
	2 p. m.	17.696	50	32.5	.22					2	S. W.	2	
	9 p. m.	17.756	36.5	27		46.5				2	S. W.	6	
28	7 a. m.	17.673	32.5	27	.48		23.5			6	W.	7	
	2 p. m.	17.720	42.5	32	.40					4	S. W.	2	
	9 p. m.	17.735	27	19		42				4	N. W.	6	
29	7 a. m.	17.790	26	20	.19		15.5			2	N.	3	
	2 p. m.	17.824	32	27	.48					2	N. E.	3	
	9 p. m.	17.882	26	23	.44	33				2	N.	4	
30	7 a. m.	17.741	32	25.5	.42		18.5			0	W.	2	
	2 p. m.	17.863	50	35.5	.29					1	S. W.	1	
	9 p. m.	17.852	32	25	.54	60				3	N. W.	1	
Oct 1	7 a. m.	17.806	31	24	.32		21			1	N.	2	
	2 p. m.	17.832	44.5	30.5	.28					1	N. W.	2	
	9 p. m.	17.874	42	32	.40	59.5				4	N.	3	
2	7 a. m.	17.802	33	28	.52		14			2	S. W.	6	

	2 p. m...	17.822	47	31.5	.26					2	N. W.	4	
	9 p. m...	17.835	39.5	24		52				0	W.	2	
3	7 a. m...	17.853	32	31	.87		23			0	N. W.	6	
	2 p. m...	17.928	48	31	.23					0	S. W.	8	
	9 p. m...	17.958	30.5	29	.80	51.5				0	W.	5	
4	7 a. m...	17.886	34	32	.80		26			2	N. W.	8	
	2 p. m...	17.950	51.5	34.5	.24					1	N. W.	5	
	9 p. m...	17.929	32.5	26.5	.42	53				3	W.	6	
5	7 a. m...	17.886	32	25.5	.36		25			3	N. W.	8	
	2 p. m...	17.960	39	28	.33					2	W.	6	
	9 p. m...	18.002	32.5	32	.95	54.5				1	S. E.	1	
6	7 a. m...	17.978	39	32	.51		26.5			0	N. W.	2	
	2 p. m...	17.959	42	31.5	.36					0	N.	2	
	9 p. m...	17.923	33.5	31	.78	66				0	W.	2	
7	7 a. m...	17.867	33	33	1.00		28.5			7	W.	4	
	2 p. m...	17.862	36	32	.67					8	S. E.	8	
	9 p. m...									10	S. E.	10	Observations prevented by storm.
8	7 a. m...	17.635	28.5	20	.14		12			10	N. W.	7	Snowing.
	2 p. m...	17.642	32.5	25	.34					4	N. W.	8	
	9 p. m...	17.766	26	26	1.00	67				0	N. W.	10	
9	7 a. m...	17.819	33.5	27	.44		11.5			0	N.	2	
	2 p. m...	17.902	40	28	.31					2	N. W.	4	
	9 p. m...	17.944	32	27	.48	51				4	S. W.	2	
10	7 a. m...	17.904	32	28	.56		23			1	W.	3	
	2 p. m...	17.975	44	29	.25					1	W.	2	
	9 p. m...	18.050	26	24	.58	52				0	W.	1	
11	7 a. m...	18.039	32	30	.73		23.5			1	S. E.	2	
	2 p. m...	18.047	50.5	32.5	.22					2	S. E.	1	
	9 p. m...	18.022	28	24	.40	51				0	W.	4	
12	7 a. m...	17.977	37	28	.39		23			0	N. W.	5	
	2 p. m...	17.979	50	31.5	.20					0	W.	5	
	9 p. m...	17.924	31	23	.26	53.5				0	N. E.	6	
13	7 a. m...	17.887	42	32	.40		24			0	W.	1	
	2 p. m...	17.816	50	31	.20					0	E.	3	
	9 p. m...	17.755	30	24	.33	55				0	N. E.	5	Gale commenced at 10 p. m. and blew 3 hours and 20 minutes, moving fragments of rock on the mountain half as large as a water-bucket.
14	7 a. m...	17.663	30	26	.48		23.5			1	N.	4	
	2 p. m...	17.651	40	27.5	.28					4	N. E.	6	
	9 p. m...	17.634	29	24	.36	49				8	N. E.	8	
15	7 a. m...	17.619	25	23	.56		17			4	N. E.	1	
	2 p. m...	17.624	25	21	.31					6	E.	10	
	9 p. m...									8	S. E.	10	
16	7 a. m...	17.701	22	19	.36		13.5			2	E.	9	
	2 p. m...	17.644	30	22	.21					3	S. E.	8	The worst storm this fall in progress.
	9 p. m...	17.588	14	12	.45	37				10	E.	5	
17	7 a. m...	17.543	11.5	11	.81		− 4			4	N. W.	10	Storm increasing.
	2 p. m...	17.632	11							10	N. E.	6	
	9 p. m...									10	N. W.	10	
18	7 a. m...	17.735	5				− 1			8	N. W.	10	
	2 p. m...	17.704	10							6	N. W.	9	

Meteorological register at summit of Mount Lincoln, Colorado—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Oct. 18	9 p. m.									10	N. W.	10	Observations prevented by the storm.
19	7 a. m.	17.890	27	22	.28		3			0	N.	4	
	2 p. m.	17.903	35	27.5	.43					0	N. E.	5	
	9 p. m.	17.899	21	17	.23	40				0	N. W.	4	
20	7 a. m.	17.837	27	19.5	.14		15.5			0	N. E.	4	
	2 p. m.	17.733	35	27	.41					2	N. E.	3	
	9 p. m.	17.673	21	15.5	.12	51				2	N.	6	
21	7 a. m.	17.525	18	16	.46		13.5			1	N. W.	8	
	2 p, m.	17.491	16							6	N. W.	6	
	9 p. m.	17.487	15	7.5		34.5				10	N.	4	
22	7 a, m.	17.384	− 5.5	− 3.5			−15			2	N.	4	
	2 p. m.	17.368	6							2	N.	8	
	9 p. m.									4	N.	10	
23	7 a. m.	17.393	3.5				−12			6	N.	10	
	2 p. m.	17.427	21	16.5	.19					6	N. W.	4	
	9 p. m.	17.430	10			25				8	N. W.	3	
24	7 a. m.	17.403	9				4.5			8	S. E.	10	
	2 p. m.	17.384	15							8	W.	10	
	9 p. m.	17.448	14	13	.67	16				10	S.	6	
25	7 a. m.	17.470	10	11.5			5.5			10	S.W.	8	Snowing for last six days, almost without intermission; wind shifting every few hours.
	2 p. m.	17.458	16.5	15	.55					10	W.	8	
	9 p. m.	17.420	7.5	08		16.5				10	S.W.	5	
26	7 a. m.	17.388	− 6	− 3.5			−18			3	N. E.	10	
	2 p. m.	17.465	− 2	04						10	N.E.	10	
	9 p. m.									10	E.	10	
27	7 a. m.	17.576	5	07			−19			10	S. E.	10	Storm continues unabated; snow drifted in places 20 or 30 feet deep; wind so strong a man can not keep his feet.
	2 p. m.	17.627	13	14						10	N. E.	10	
	9 p. m.	17.674	10	11		12				10	N. W.	10	
28	7 a. m.	17.802	23	18	.19		5			2	N. W.	5	
	2 p. m.	17.794	17	16.5						5	N.	8	
	9 p. m.	17.783	11	12	.84	22.5				6	N.	8	
29	7 a. m.	17.810	25	19	.14		3.5			0	N.	4	
	2 p. m.	17.797	20	16	.22					0	S.W.	6	
	9 p. m.	17.811	15	13	.45	30				0	S.W.	4	
30	7 a. m.	17.746	17	11.5	.09		11			2	N. E.	3	

		2 p. m...	17.757	21	17	.23	.....	.....	.....	.....	0	N. E.	2
		9 p. m...	17.730	13	11	.45	22.5	.....	.....	.....	0	S.W.	2
	31	7 a. m...	17.665	24	17	.....	.....	8	.....	.....	3	N.E.	5
		2 p. m...	17.633	25	.....	.....	.....	.....	.....	.....	6	S.W.	2
		9 p. m...	17.596	15.5	10	.....	20	.....	.....	.....	8	S.W.	4
Nov.	1	7 a. m...	17.546	21	17	.23	.....	5	.....	.....	3	S.W.	6
		2 p. m...	17.548	22	18	.25	.....	.....	.....	.....	5	N. W.	2
		9 p. m...	17.603	9.5	08	.....	20	.....	.....	.....	0	.....	0
	2	7 a. m...	17.778	32	23	.23	.....	3	.....	.....	2	N.	4
		2 p. m...	17.822	44	28	.23	.....	.....	.....	.....	2	N.	2
		9 p. m...	17.873	19	13	.06	51	.....	.....	.....	0	.....	0
	3	7 a. m...	17.803	17	12	.12	.....	12.5	.....	.....	0	.....	8
		2 p. m...	17.731	28.5	22	.24	.....	.....	.....	.....	1	N. W.	9
		9 p. m...	17.756	19	14.5	.16	30	.....	.....	.....	1	N. W.	8
	4	7 a. m...	17.701	18	12	.05	.....	12	.....	.....	4	N. E.	3
		2 p. m...	17.725	45	32	.31	.....	.....	.....	.....	2	W.	1
		9 p. m...	17.721	17	14	.30	46	.....	.....	.....	0	N. W.	2
	5	7 a. m...	17.761	16	12	.19	.....	8	.....	.....	0	N.	4
		2 p. m...	17.795	28.5	22	.24	.....	.....	.....	.....	1	N. W.	1
		9 p. m...	17.732	17.5	13	.16	42	.....	.....	.....	3	N. W.	7
	6	7 a. m...	17.639	16	12	.19	.....	3	.....	.....	4	N. W.	9
		2 p. m...	17.607	17	15	.46	.....	.....	.....	.....	5	N. W.	6
		9 p. m...	17.630	14	11	.30	25	.....	.....	.....	6	N.	8
	7	7 a. m...	17.705	17	12.5	.16	.....	5.5	.....	.....	3	N.	7
		2 p. m...	17.808	22	17	.17	.....	.....	.....	.....	0	N. W.	4
		9 p. m...	17.844	18	10	.....	24	.....	.....	.....	0	N.E.	2
	8	7 a. m...	17.910	16	13	.30	.....	12	.....	.....	0	E.	2
		2 p. m...	17.880	32	23	.23	.....	.....	.....	.....	0	W.	1
		9 p. m...	18.001	18	14	.20	40	.....	.....	.....	0	.....	0
	9	7 a. m...	17.975	28	18	.....	.....	12.5	.....	.....	0	E.	2
		2 p. m...	18.000	36	24	.....	.....	.....	.....	.....	0	N. W.	1
		9 p. m...	17.991	23	20	.37	43	.....	.....	.....	0	W.	1
	10	7 a. m...	17.928	18.5	12	.....	.....	14.5	.....	.....	0	E.	2
		2 p. m...	17.905	30	22	.21	.....	.....	.....	.....	0	N. W.	2
		9 p. m...	17.856	17	13	.20	42	.....	.....	.....	0	N. E.	3
	11	7 a. m...	17.756	16	11	.12	.....	3	.....	.....	2	N. E.	6
		2 p. m...	17.805	23	17.5	.17	.....	.....	.....	.....	1	N. W.	8
		9 p. m...	17.817	14	11.5	.38	23	.....	.....	.....	0	E.	2
	12	7 a. m...	17.804	18	13	.13	.....	8.5	.....	.....	0	E.	3
		2 p. m...	17.797	28	21	.20	.....	.....	.....	.....	0	N. E.	2
		9 p. m...	17.780	18	12	.05	36.5	.....	.....	.....	0	N. E.	2
	13	7 a. m...	17.796	17	16	.68	.....	10.5	.....	.....	2	.....	0
		2 p. m...	17.783	38	30	.45	.....	.....	.....	.....	0	.....	0
		9 p. m...	17.773	18.5	14	.16	42.5	.....	.....	.....	1	W.	1
	14	7 a. m...	17.671	18	16	.46	.....	13	.....	.....	1	N. E.	3
		2 p. m...	17.689	35.5	31	.60	.....	.....	.....	.....	3	N. E.	2
		9 p. m...	17.660	19	17	.46	37.5	.....	.....	.....	4	N. W.	2
	15	7 a. m...	17.725	16	14	.45	.....	11	.....	.....	7	N. E.	4
		2 p. m...	17.736	15.5	14.5	.67	.....	.....	.....	.....	4	N. E.	3
		9 p. m...	17.754	14	11	.30	21	.....	.....	.....	3	N. E.	5
	16	7 a. m...	17.808	15	14	.67	.....	7.5	.....	.....	3	N. W.	8
		2 p. m...	17.842	26.5	20	.17	.....	.....	.....	.....	0	N. W.	4

Meteorological register at summit of Mount Lincoln, Colorado—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Nov. 16	9 p. m.	17.797	20	18	.48	26				0	N.	8	
17	7 a. m.	17.714	16.5	15	.56		13			3	N.	8	
	2 p. m.	17.625	21	19	.48					3	N.	9	
	9 p. m.												
18	7 a. m.	17.643	5	3.5			−11			2	N.	10	
	2 p. m.	17.728	14	10	.19					0	N. E.	4	
	9 p. m.	17.728	7	3		13.5				0	N. E.	2	
19	7 a. m.	17.735	13	8			1			2	N. E.	5	
	2 p. m.	17.665	24	20	.28					4	N. E.	4	
	9 p. m.	17.618	14	8		23				0		0	
20	7 a. m.	17.572	11	5.5			6			6	N. E.	2	
	2 p. m.	17.584	20	15.5	.17					1	N.	3	
	9 p. m.	17.658	10.5	7.5		27				0	E.	4	
21	7 a. m.	17.587	11	8			5.5			4	N. W.	7	
	2 p. m.	17.552	19	15	21					7	N.	4	
	9 p. m.	17.452	12.5	12	12	19.5				8	N. W.	2	
22	7 a. m.	17.402	9				5			8	N. W.	3	
	2 p. m.	17.438	21	19	.49					8		0	
	9 p. m.	17.545	2			24				6	W.	2	
23	7 a. m.	17.598	5	4.5			− 7			0	N. W.	4	
	2 p. m.	17.643	17	14	.30					0	N. W.	4	
	9 p. m.	17.748	15	10	.12	18.5				0	N. E.	5	
24	7 a. m.	17.789	16.5	14	.16		7			1	N. E.	3	
	2 p. m.	17.743	19.5	17	.40					3	N. W.	4	
	9 p. m.	17.864	14	10	.19	21.5				0	N. W.	3	
25	7 a. m.	17.726	15	11	.20		7.5			3	N. E.	8	
	2 p. m.	17.734	23	16						4	N. W.	3	
	9 p. m.	17.616	12	10	.45	23				1	N. E.	8	
26	7 a. m.	17.446	9	10			6			8	N. W.	7	
	2 p. m.	17.450	14.5	12	.37					4	N. W.	8	
	9 p. m.	17.454	9	10		24				10	N.	9	
27	7 a. m.	17.352	8	9			3			10	N.	10	
	2 p. m.												
	9 p. m.												
28	7 a. m.	17.659	11	10	.67		2			4	N. W.	8	
	2 p. m.	17.690	25	16						3	N. W.	5	
	9 p. m.	17.736	14	10	.19	48				4	N.	5	
29	7 a. m.	17.464	9.5	10			6			7	W.	8	
	2 p. m.												

		9 p. m.											
	30	7 a. m.	17.692	14.5	11	.15		8			3	N. W.	6
		2 p. m.	17.671	22	16	.10					2	N. W.	4
		9 p. m.	17.672	14.5	10	.14	21.5				4	W.	7
Dec.	1	7 a. m.	17.464	9.5	10			6			7	W.	8
		2 p. m.	17.356	15	12.5	.38					8	N. W.	6
		9 p. m.	17.349	9	7		14				8	W.	6
	2	7 a. m.	17.181	− 3	− 1			− 8			4	N.	6
		2 p. m.	17.083	3.5	4.5						5	N. W.	7
		9 p. m.	17.074	− 5	− 3		5				8	S. W.	3
	3	7 a. m.	16.967					−38			10	N.	9
		2 p. m.	17.033								7	N.	9
		9 p. m.											
	4	7 a. m.	17.201	− 8				−31			8	N.	8
		2 p. m.	17.224	0	2						5	N.	6
		9 p. m.	17.329	− 1	2		− 1				8	N. E.	4
	5	7 a. m.	17.393	3	5			− 7			10	N. E.	5
		2 p. m.	17.407	12	10	.45					8	N. W.	4
		9 p. m.	17.389	7	9		13				10	N. W.	4
	6	7 a. m.	17.319	2	5			− 3			10	N.	6
		2 p. m.	17.334	6	10						10	N. W.	6
		9 p. m.	17.367	1	6		7.5				4	W.	5
	7	7 a. m.	17.312	5	7.5			− 6.5			10	E.	8
		2 p. m.	17.252	8	9						10	E.	7
		9 p. m.											
	8	7 a. m.	17.380	− 7	2	—		−15			8	N.	10
		2 p. m.	17.448	14	11	.30					3	N. W.	4
		9 p. m.	17.520	− 1	5		9				0	N. W.	3
	9	7 a. m.	17.506	− 2	5.5			− 7			2	N. W.	8
		2 p. m.	17.501	9.5	11						3	N.	8
		9 p. m.	17.528	4	5		8				4	N. W.	10
	10	7 a. m.	17.427	4.5	6			− 2			8	N. W.	9
		2 p. m.	17.424	12	14						6	N.	8
		9 p. m.	17.415	5	11		13				6	N. W.	4
	11	7 a. m.	17.308	3	10			− 1			8	N. W.	4
		2 p. m.	17.216	9	14						7	N.	4
		9 p. m.	17.248	− 7	0		8				8	N.	3
	12	7 a. m.	17.383					−24			7	N.	8
		2 p. m.	17.433	4	3						2	N. W.	8
		9 p. m.	17.584	0	8		− 2				0	N.	4
	13	7 a. m.	17.719	3	7			−12.5			0		0
		2 p. m.	17.756	11	14						2	N. W.	2
		9 p. m.	17.760	5	16		−10.5				0		0
	14	7 a. m.	17.637	4	6			− 2			0	N. W.	4
		2 p. m.	17.621	10	11						0	N. E.	5
		9 p. m.											
	15	7 a. m.											
		2 p. m.											
		9 p. m.											
	16	7 a. m.											
		2 p. m.											
		9 p. m.											

Meteorological register at summit of Mount Lincoln, Colorado—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Dec. 17	7 a. m.												
	2 p. m.												
	9 p. m.												
18	7 a. m.	17.556	− 9				−11			9	N.	7	
	2 p. m.	17.613	− 6	− 1						3	N.	4	
	9 p. m.	17.596	− 7	0		3				3	N.	6	
19	7 a. m.	17.548	− 9	0			−13			10	N. E.	7	
	2 p. m.	17.537	0	3						8	N. W.	6	
	9 p. m.	17.497	− 4	0		2				3	N. E.	4	
20	7 a. m.	17.460	4	8			−12			5	N.	4	
	2 p. m.	17.446	10							8	N. E.	4	
	9 p. m.	17.408	4.5	6		24				7	N. E.	5	
21	7 a. m.	17.438	0	8			− 4			2	N. E.	4	
	2 p. m.	17.470	16.5	14	.38					0	N.	2	
	9 p. m.	17.494	4	2		17				0	N. W.	2	
22	7 a. m.	17.586	4.5	3.5			− 4.5			2	N.	4	
	2 p. m.	17.504	18.5	16	.39					3	N. E.	4	
	9 p. m.	17.489	5	5.5		19				3	N. E.	4	
23	7 a. m.	17.496	− 4	2			− 9			8	N.	4	
	2 p. m.	17.580	7	9						8	S. W.	3	
	9 p. m.	17.611	− 5	−		11.5				0	N. W.	3	
24	7 a. m.	17.690	6	3.5			−14			0	N. E.	3	
	2 p. m.	17.764	14							1	N. W.	6	
	9 p. m.	17.776	17	10		13				7	N.	6	
25	7 a. m.	11.667	8.5	6			3.5			4	N. E.	9	
	2 p. m.	17.578	14	10.5	.24					4	N. E.	10	
	9 p. m.												
26	7 a. m.	17.469	− 5	− 2			−13			3	N. E.	9	
	2 p. m.	17.507	14.5	6						3	N.	8	
	9 p. m.	17.595	6	5		5.5				0	N.	6	
27	7 a. m.	17.588	15	10.5	.15		− 4			0	N. E.	5	
	2 p. m.	17.611	17	10.5						4	N. E.	8	
	9 p. m.	17.619	14.5	7		18.5				3	N. E.	6	
28	7 a. m.	17.634	17	14	.30		7			2	N. E.	4	
	2 p. m.	17.643	23	17	.11					2	N. E.	5	
	9 p. m.	17.639	14.5	11	.23	24				4	N. E.	8	
29	7 a. m.	17.647	11				8			8	N.	7	
	2 p. m.	17.727	14							8	N. W.	7	
	9 p. m.	17.746	14			16				4	N. E.	8	

30	7 a. m...	17.732	16.5				9.5			10	N. W.	7	
	2 p. m...	17.736	14							8	N. W.	7	
	9 p. m...	17.701	14	12	.45	13				8	N.	6	
31	7 a. m...	17.592	11.5	9			7.5			3	N. W.	5	
	2 p. m...	17.630	16.5	14.5	.45					8	N.	4	
	9 p. m...	17.577	9	10.5		16.5				10	N. W.	8	
1874.													
Jan. 1	7 a. m...	17.530	3.5	5			− 3			0	N. E.	10	
	2 p. m...	17.590	13.5	12	.55					2	N. E.	7	
	9 p. m...	17.600	10.5	11.5		14				7	N.	6	
2	7 a. m...	17.424	13				7			10	N.	8	
	2 p. m...	17.334	16	17.5						10	S. W.	9	
	9 p. m...	17.182	15.5			16				10		9	
3	7 a. m...	16.990	− 9				−15			10	N.	8	
	2 p. m...	17.019	− 9.5							6	N. W.	5	
	9 p. m...	17.137				− 5				9	N.	9	
4	7 a. m...	17.248								0	N.	8	
	2 p. m...	17.362	− 4	− 2			−36.5			0	N. E.	5	
	9 p. m...	17.518	3	2		7.5				0	N.	3	
5	7 a. m...	17.569	0	1			− 9			2	N.	7	
	2 p. m...	17.544	8	8.5						2	N. W.	10	
	9 p. m...	17.587	2	3		9				10	N.	9	
6	7 a. m...	17.677	5	4.5			− 6			0	N. W.	6	
	2 p. m...	17.703	15.5	11	.15					0	N. E.	4	
	9 p. m...	17.676	11.5	7		16				0	N.	6	
7	7 a. m...	17.628	7.5				4			10	N.	10	The wet bulb thermometer broken.
	2 p. m...	17.613	10							4	N.	9	
	9 p. m...	17.575	0			10.5				10	N.	9	
8	7 a. m...	17.475	4				− 2.5			4	N.	10	
	2 p. m...	17.542	12							10	N. W.	8	
	9 p. m...	17.555	4			7				7	N.	6	
9	7 a. m...	17.574	5.5				− 2			8	N.	9	
	2 p. m...	17.610	13.5							4	N. W.	7	
	9 p. m...	17.620	6			12				0	N.	4	
10	7 a. m...	17.536	5.5				1			0	N. E.	4	
	2 p. m...	17.558	15							1	N. E.	3	
	9 p. m...	17.549	7			16.5				0	N.	3	
11	7 a. m...	17.518	6				1			7	N.	4	
	2 p. m...	17.504	21.5							3	W.	2	
	9 p. m...	17.465	5.5			20.5				7	N. W.	8	
12	7 a. m...	17.503	4.5				0			6	N. E.	5	
	2 p. m...	17.487	15.5							2	N. W.	4	
	9 p. m...	17.524	5.5			14.5				2	W.	3	
13	7 a. m...	17.515	3				2			8	N.	4	
	2 p. m...	17.553	6							5	N. W.	3	
	9 p. m...	17.552	− 2			10.5				3	N. E.	9	
14	7 a. m...	17.590	3				− 3			3	N.	4	
	2 p. m...												
	9 p. m...	17.650	13			18				2	N.	2	
15	7 a. m...	17.514	6				2			2	N.	6	
	2 p. m...	17.485	12.5							4	N. W.	8	
	9 p. m...	17.557	11.5			13				10	N.	9	

Meteorological register at summit of Mount Lincoln, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1874.													
Jan. 16	7 a. m...	17.503	5				5.5			4	N.	7	
	2 p. m...	17.433	17							5	N.	8	
	9 p. m...	17.447	15.5			19.5				10	W.	7	
17	7 a. m...	17.375	14				12.5			8	W.	8	
	2 p. m...	17.418	21							7	N. W.	8	
	9 p. m...	17.365	14.5			23.5				10	W.	9	
18	7 a. m...	17.289	13							10	W.	10	Minimum thermometer out of order.
	2 p. m...	17.334	13.5							10	W.	8	
	9 p. m...	17.427	4			15				10	N. W.	4	
19	7 a. m...	17.398	1							4	N. W.	8	
	2 p. m...	17.391	− 3							3	N. W.	8	
	9 p. m...	17.370	4.5			9				9	W.	6	
20	7 a. m...	17.188	2							4	W.	7	
	2 p. m...	17.127	1.5							10	N. W.	9	
	9 p. m...	17.142	− 3			4.5				10	W.	5	
21	7 a. m...	17.131	− 6							7	N. W.	9	
	2 p. m...	17.087	3.5							8	N. E.	4	
	9 p. m...	17.093	−12			5.5				8	N. W.	5	
22	7 a. m...	17.019								7	N. E.	6	
	2 p. m...	17.050	−13							5	N. E.	7	
	9 p. m...	16.964				1				10	N. E.	8	
23	7 a. m...	17.139								8	N. E.	10	
	2 p. m...	17.271	− 2							10	N. W.	10	
	9 p. m...	17.461				17				0	N.	10	
24	7 a. m...	17.673	− 7							0	N.	9	
	2 p. m...	17.768	12.5							0	N.	4	
	9 p. m...	17.820	6			15.5				0	N. E.	3	
25	7 a. m...	17.750	7.5							4	N.	8	
	2 p. m...	17.820	23							0	N.	3	
	9 p. m...	17.808	13			21				0	N.	1	
26	7 a. m...	17.681	16				9			0	N. E.	2	
	2 p. m...	17.564	17							2	N. W.	4	
	9 p. m...	17.421	3			10.5				10	N. W.	8	
27	7 a. m...	17.521	− 2				− 9			10	N. W.	9	
	2 p. m...	17.586	3.5							10	N. W.	8	
	9 p. m...	17.661	− 1			4				0	N.	8	
28	7 a. m...	17.712	0				− 7.5			2	N. E.	7	
	2 p. m...	17.641	13							2	N. W.	4	
	9 p. m...	17.786	6			13.5				1	N.	4	

29	7 a. m...	17.671	6.5				3.5			8	N. W.	4	
	2 p. m...	17.638	9.5							8	N. W.	5	
	9 p. m...	17.625	0			9				0	N. W.	3	
30	7 a. m...	17.573	4				− 8			7	N. W.	4	
	2 p. m...	17.536	18							5	N.	2	
	9 p. m...	17.469	4			26.5				4	W.	2	
31	7 a. m...	17.360	− 3				− 8.5			6	W.	2	
	2 p. m...	17.352	23							4	W.	2	
	9 p. m...	17.411	− 9			26				8	W.	1	

Meteorological register at Fairplay, Colo.

1873. July 17	7 a. m...												
	2 p. m...												
	9 p. m...	21.170	50.1	45.5	.68								
18	7 a. m...	21.159	63.2	54.4	.55								
	2 p. m...	21.155	62.6	49.5	.41								
	9 p. m...	21.127	50.2	43.4	.58								
19	7 a. m...	21.195	59.5	49.9	.50								
	2 p. m...	21.143	68.1	44.9	.39								
	9 p. m...	21.177	45.2	37.8	.55								
20	7 a. m...	21.134	61.0	45.5	.33								
	2 p. m...	21.066	68.8	46.0	.23								
	9 p. m...	21.098	51.0	41.2	.46								
21	7 a. m...	21.021	64.0	49.1	.36								
	2 p. m...	20.994	73.9	52.2	.27								
	9 p. m...	21.041	52.5	45.2	.59								
22	7 a. m...	21.058	64.5	51.1	.42								
	2 p. m...	21.079	59.8	49.1	.47								Taken an hour late.
	9 p. m...	21.135	53.5	47.9	.69								
23	7 a. m...	21.140	63.5	52.0	.44								
	2 p. m...	21.123	72.2	52.7	.30								
	9 p. m...	21.177	53.5	45.6	.55								
24	7 a. m...	21.170	66.2	52.0	.40								Rain.
	2 p. m...	21.174	51.2	49.5	.86								
	9 p. m...	21.191	50.3	47.0	.79								
25	7 a. m...	21.130	56.0	51.0	.70								
	2 p. m...	21.085	63.0	48.5	.36								
	9 p. m...	21.179	48.5	44.8	.73								
26	7 a. m...	21.113	56.0	48.5	.56								
	2 p. m...	21.039	67.5	47.0	.26								
	9 p. m...	21.061	50.5	44.3	.63								
27	7 a. m...	21.067	59.0	46.0	.40								
	2 p. m...	21.068	61.0	46.2	.35								
	9 p. m...	21.101	49.3	43.5	.62								
28	7 a. m...	21.041	52.8	45.7	.64								
	2 p. m...	21.008	60.5	43.0	.30								
	9 p. m...	21.068	47.0	43.5	.72								

Meteorological register at Fairplay, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
July 29	7 a. m.	21.048	55.0	42.3	.38								
	2 p. m.	20.989	64.2	44.5	.25								
	9 p. m.	21.016	47.5	41.0	.61								
30	7 a. m.	20.981	52.5	45.0	.59								
	2 p. m.	20.948	63.2	45.5	.29								
	9 p. m.	20.999	49.5	42.5	.57								
31	7 a. m.	20.980	59.0	47.0	.43								
	2 p. m.	20.987	69.5	47.3	.23								
	9 p. m.	21.040	43.5	38.3	.65								
Aug. 1	7 a. m.	21.057	58.5	51.0	.61								
	2 p. m.	21.032	52.7										
	9 p. m.	21.120	43.0										
2	7 a. m.	21.070	51.0	43.5	.54								
	2 p. m.	21.053	63.5	48.5	.36								
	9 p. m.	21.094	46.0	42.7	.78								
3	7 a. m.	21.104	53.0	42.5	.43								
	2 p. m.	21.053	64.5	45.5	.27								
	9 p. m.	21.082	50.0	41.5	.49								
4	7 a. m.	21.024	55.0	48.5	.60								
	2 p. m.	21.002	63.5	51.5	.44								
	9 p. m.	21.029	48.5	45.0	.79								
5	7 a. m.	21.057	58.0	46.5	.85								
	2 p. m.	21.053	65.5	50.0	.37								
	9 p. m.	21.085	58.5	45.0	.39								
6	7 a. m.	21.113	54.5	49.5	.69								
	2 p. m.	21.109	59.5	48.0	.46								
	9 p. m.	21.109	50.0	48.0	.86								
7	7 a. m.	21.050	56.0	52.0	.75								
	2 p. m.	21.020	57.0	49.5	.57								
	9 p. m.	21.025	49.0	46.0	.79								
8	7 a. m.	21.008	56.3	47.0	.52								
	2 p. m.	21.025	60.5	48.0	.43								
	9 p. m.	21.085	53.0	46.0	.59								
9	7 a. m.	21.096	56.0	50.0	.65								
	2 p. m.	21.069	60.2	49.0	.47								
	9 p. m.	21.110	53.2	49.0	.74								
10	7 a. m.	21.124	50.0	47.0	.79								
	2 p. m.	21.047	61.7	48.7	.41								
	9 p. m.	21.090	53.5	48.5	.69								

11	7 a. m...	21.092	57.0	50.5	.61							
	2 p. m...	21.021	68.0	51.0	.33							
	9 p. m...	21.047	54.5	49.0	.69							
12	7 a. m...	21.042	58.0	50.5	.57							
	2 p. m...	20.993	68.0	53.0	.38							
	9 p. m...	21.052	50.0	47.5	.79							
13	7 a. m...	21.076	59.5	53.5	.66							
	2 p. m...	21.037	65.2	52.5	.81							
	9 p. m...	21.116	49.5	48.0	.93							
14	7 a. m...	21.095	55.7	53.0	.81							
	2 p. m...	21.075	56.2	49.0	.61							
	9 p. m...	21.102	47.0	46.0	.92							
15	7 a. m...	21.139	47.5	46.5	.92							
	2 p. m...	21.094	53.5	50.5	.80							
	9 p. m...	21.106	46.5	45.0	.92							
16	7 a. m...	21.054	45.0	44.0	.92							
	2 p. m...	21.016	61.0	49.0	.44							
	9 p. m...	21.043	45.0	43.0	.85							
17	7 a. m...	21.104	53.0	48.5	.69							
	2 p. m...	21.072	64.0	47.5	.31							
	9 p. m...	21.097	46.5	43.0	.78							
18	7 a. m...	21.119	53.5	47.0	.64							
	2 p. m...	21.113	58.2	43.0	.34							
	9 p. m...	21.121	47.0	39.5	.52							
19	7 a. m...	21.131	48.0	41.0	.57							
	2 p. m...	21.099	59.5	44.0	.34							
	9 p. m...	21.084	49.0	41.0	.53							
20	7 a. m...	21.041	55.0	45.0	.48							
	2 p. m...	21.029	57.0	45.8	.45							
	9 p. m...	21.035	48.0	42.5	.67							
21	7 a. m...	21.020	46.4	42.5	.72							
	2 p. m...	20.991	65.0	49.0	.34							
	9 p. m...	20.995	51.5	45.0	.63							
22	7 a. m...	20.976	50.0	47.0	.79							
	2 p. m...	20.927	60.5	50.5	.50							
	9 p. m...	20.924	52.0	49.0	.80							
23	7 a. m...	20.964	50.1	46.5	.73							
	2 p. m...	20.998	63.5	52.0	.43							
	9 p. m...	21.056	49.0	47.5	.86							
24	7 a. m...	21.118	51.0	42.0	.50							
	2 p. m...	21.051	60.0	48.5	.43							
	9 p. m...	21.036	68.0	42.0	.17							
25	7 a. m...	21.036	56.0	41.0	.33							
	2 p. m...	21.021	61.0	55.0	.67							
	9 p. m...	21.033	60.0	40.0	.23							
26	7 a. m...	21.054	47.0	42.5	.67							
	2 p. m...	21.053	68.0	49.0	.28							
	9 p. m...	21.061	49.5	41.0	.53							
27	7 a. m...	21.070	48.0	42.5	.62							
	2 p. m...	21.033	72.5	51.0	.26							
	9 p. m...	21.033	51.0	45.0	.63							
28	7 a. m...	21.084	50.0	43.0	.58							

Meteorological register at Fairplay, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Aug. 28	2 p. m.	21.068	68.0	50.0	.31								
	9 p. m.	21.120	52.0	48.0	.74								
29	7 a. m.	21.124	48.0	44.0	.73								
	2 p. m.	21.107	60.0	48.5	.43								
	9 p. m.	20.995	48.0	45.0	.79								
30	7 a. m.	21.114	49.0	45.5	.73								
	2 p. m.	21.079	61.0	53.0	.58								
	9 p. m.	21.088	53.0	52.0	.93								
31	7 a. m.	21.105	54.5	49.0	.69								
	2 p. m.	21.074	62.0	48.0	.38								
	9 p. m.	21.095	52.0	46.0	.64								
Sept. 1	7 a. m.	21.072	47.5	44.0	.79								
	2 p. m.	21.025	62.5	49.5	.41								
	9 p. m.	21.026	45.0	42.0	.78								
2	7 a. m.	20.995	43.0	41.0	.85								
	2 p. m.	20.932	61.3	48.0	.41								
	9 p. m.	20.839	45.5	39.5	.65								
3	7 a. m.	20.916	48.0	43.0	.67								
	2 p. m.	20.923	61.5	45.5	.33								
	9 p. m.	20.955	45.5	36.5	.46								
4	7 a. m.	20.987	45.0	35.5	.42								
	2 p. m.	20.987	61.5	45.0	.33								
	9 p. m.	21.060	41.5	35.0	.58								
5	7 a. m.	21.047	40.5	38.2	.84								
	2 p. m.	21.056	62.5	46.5	.33								
	9 p. m.	21.038	44.0	40.5	.72								
6	7 a. m.	21.162	45.0	42.0	.78								
	2 p. m.	21.166	47.5	45.0	.82								
	9 p. m.	21.195	41.5	40.5	.92								
7	7 a. m.	21.197	42.0	41.0	.92								
	2 p. m.	21.136	52.0	47.0	.69								
	9 p. m.	21.137	42.5	42.0	.96								
8	7 a. m.	21.089	44.5	40.0	.69								
	2 p. m.	21.077	51.5	43.0	.52								
	9 p. m.	21.092	37.0	35.0	.83								
9	7 a. m.	21.071	37.5	35.5	.83								
	2 p. m.	21.036	57.0	57.0	1.00								
	9 p. m.	21.046	42.0	37.0	.65								
10	7 a. m.	21.053	38.5	35.0	.72								

	2 p. m...	21.033	65.0	44.5	.25							
	9 p. m...	20.986	45.0	40.0	.66							
11	7 a. m...	20.968	50.0	42.0	.53							
	2 p. m...	20.984	52.0	42.0	.46							
	9 p. m...	21.037	46.5	39.5	.58							
12	7 a. m...	21.058	46.0	38.5	.51							
	2 p. m...	21.053	60.5	45.0	.35							
	9 p. m...	21.071	42.0	37.5	.65							
13	7 a. m...	21.070	37.5	33.0	.64							
	2 p. m...	21.032	60.5	44.0	.32							
	9 p. m...	21.057	41.0	34.0	.53							
14	7 a. m...	21.048	48.5	42.0	.62							
	2 p. m...	21.021	64.5	45.5	.27							
	9 p. m...	21.020	44.0	36.5	.50							
15	7 a. m...	21.065	41.0	34.0	.52							
	2 p. m...	21.067	64.5	44.0	.25							
	9 p. m...	21.089	45.5	42.5	.78							
16	7 a. m...	21.076	34.5	30.0	.63							
	2 p. m...	21.027	63.0	43.0	.25							
	9 p. m...	20.948	57.5	42.5	.33							
17	7 a. m...	20.952	40.5	35.5	.63							
	2 p. m...	20.925	62.5	48.0	.38							
	9 p. m...	20.940	50.0	38.0	.38							
18	7 a. m...	20.964	38.5	33.0	.60							
	2 p. m ..	20.946	60.5	41.0	.24							
	9 p. m...	.....	40.5	38.0	.84							
19	7 a. m...	20.900	40.5	.....	.....							
	2 p. m...	20.860	45.5	45.0	.96							
	9 p. m...	20.867	42.0	38.0	.71							
20	7 a. m...	20.880	41.5	36.0	.64							
	2 p. m...	20.867	53.5	41.0	.40							
	9 p. m...	20.911	43.0	38.5	.65							
21	7 a. m...	20.900	46.2	38.0	.51							
	2 p. m...	20.886	51.0	39.0	.39							
	9 p. m...	28.935	43.0	35.0	.49							
22	7 a. m...	20.928	44.0	34.0	.41							
	2 p. m...	20.917	55.0	39.5	.29							
	9 p. m...	20.987	45.0	38.5	.55							
23	7 a. m...	20.918	48.5	35.0	.33							
	2 p. m ..	28.820	64.5	40.0	.18							
	9 p. m...	20.850	46.0	37.0	.47							
24	7 a. m...	20.792	46.5	34.5	.35							
	2 p. m...	20.766	60.0	41.0	.25							
	9 p. m...	20.789	48.0	35.0	.33							
25	7 a. m...	20.705	52.0	39.5	.36							
	2 p. m...	20.671	63.0	49.0	.39							
	9 p. m...	20.680	48.0	38.0	.44							
26	7 a. m...	20.674	52.0	39.0	.36							
	2 p. m...	20.683	62.0	43.0	.26							
	9 p. m...	.....	.....	.....	.....							

Meteorological register at Cañon City, Colo.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	Clouds. Kind.	Clouds. Direction from.	Clouds. Amount.	Wind. Direction.	Wind. Amount.	Remarks.
1873.													
July 19	7 a. m.	25.021	81										
	2 p. m.	25.026	82										
	9 p. m.	24.915	72.5										
20	7 a. m.	24.835	80										Clear.
	2 p. m.	24.900	90										Raining.
	9 p. m.	24.761	78.3										Cloudy; sky overcast.
21	7 a. m.	24.758	88.3										Clear.
	2 p. m.	24.645	96.3										
	9 p. m.	24.685	83										Cloudy; sky overcast.
22	7 a. m.	24.832	94.5										
	2 p. m.	24.731	96										Cumuli and misty.
	9 p. m.	24.866	69.5										Cloudy; sky overcast.
23	7 a. m.	24.895	82.5										Few cumuli; clearing.
	2 p. m.	24.844	90										
	9 p. m.	24.930	80.5										
24	7 a. m.	24.967	89										Clear.
	2 p. m.	24.858	92.5										
	9 p. m.	25.038	68										Rain.
25	7 a. m.	24.986	69										Clear.
	2 p. m.	24.868	72.5										Rain.
	9 p. m.	25.010	63										Cloudy; sky overcast.
26	7 a. m.	25.006	80										Clear.
	2 p. m.	24.852	80										Do.
	9 p. m.	24.866	72										
27	7 a. m.	24.896	80.5								S.		
	2 p. m.	24.886	74										Clear.
	9 p. m.	24.963	66										Few cumuli; clearing.
28	7 a. m.	24.895	69.5								E.		
	2 p. m.	24.824	75										
	9 p. m.	24.928	63										Cloudy and calm; sky overcast.
29	7 a. m.	24.905	73								S.		Clear.
	2 p. m.	34.793	79.5								N. E.		Do.
	9 p. m.	24.816	69.5										Clear and calm.
30	7 a. m.	24.726	79								N. E.		Do.
	2 p. m.	24.743	80.5										Rain-clouds; calm.
	9 p. m.	24.732	68										Clear.
31	7 a. m.	24.735	80								N. W.		Do.
	2 p. m.	24.687	88					Nimbus			N. E.		
	9 p. m.	24.788	70										Clear and calm.

Aug.	1	7 a. m.	24.784	76								E.		Nimbus.
		2 p. m.	24.792	88								W.		
		9 p. m.	24.851	72										Clear and calm.
	2	7 a. m.	24.952	67								S.		Clear.
		2 p. m.	24.901	75					Cumulus			N. E.		
		9 p. m.	24.866	61.5										Clear and calm.
	3	7 a. m.	24.932	68										Do.
		2 p. m.	24.831	81.5								N. E.		Some cirri.
		9 p. m.	24.841	72										Clear and calm.
	4	7 a. m.	24.792	70								Calm.		Cloudy; sky overcast.
		2 p. m.	24.688	89.5								E.		Nimbus and cumulus.
		9 p. m.	24.771	72								E.		Clear.
	5	7 a. m.	24.838	73					Cumulus			Calm.		
		2 p. m.	24.761	94					Nimbus			S.		
		9 p. m.	24.906	79					do			S.		
	6	7 a. m.	24.890	83					Stratus			Calm.		
		2 p. m.	24.818	84.5					Cumulus, nimbus			W.		
		9 p. m.	24.907	68					Cumulus			Calm.		
	7	7 a. m.	24.806	74.5					Cirrus			N. E.		
		2 p. m.	24.725	82					Nimbus			E.		
		9 p. m.	24.776	66								Calm.		Clear.
	8	7 a. m.	24.730	73					Stratus			E.		
		2 p. m.	24.704	87.5					Cumulus, nimbus			E.		
		9 p. m.	24.859	68					do			Calm.		
	9	7 a. m.	24.885	74					Cirrus, stratus			Calm.		
		2 p. m.	24.105	72								Calm.		
		9 p. m.	24.835	82					Cirrus, nimbus			E.		
	10	7 a. m.	24.921	83								Calm.		
		2 p. m.	24.836	84					Cumulus			N. E.		
		9 p. m.	24.863	71					Stratus, nimbus			N. E.		
	11	7 a. m.	24.848	84								S. W.		
		2 p. m.	24.758	87.5					Cirrus, stratus			E.		
		9 p. m.	24.865	73					Clear			Calm.		
	12	7 a. m.	24.748	88					do			Calm.		
		2 p. m.	24.701	92					Cumulus			E. S. E.		
		9 p. m.	24.768	73					Clear			N.		
	13	7 a. m.	24.776	85					do			N.		
		2 p. m.	24.725	92.5					Cumulus, nimbus			N. E.		
		9 p. m.	24.887	81					Clear			Calm.		
	14	7 a. m.	24.886	83					do			S. E.		
		2 p. m.	24.835	95					Nimbus			E.		Showery.
		9 p. m.	24.916	70					Stratus			E.		
	15	7 a. m.	24.878	83					Nimbus			S.		Rain.
		2 p. m.	24.427	66					do			N. E.		Do.
		9 p. m.	25.004	62					do			E.		
	16	7 a. m.	24.925	62					do			Calm.		
		2 p. m.	24.810	72					do			Calm.		
		9 p. m.	24.894	66					do			Calm.		
	17	7 a. m.	24.937	75					Cumulus, nimbus			N.		
		2 p. m.	24.824	77					Cumulus			N. E.		
		9 p. m.	24.896	66					Stratus			Calm.		
	18	7 a. m.	24.868	74.5					Stratus, nimbus			N.		

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Aug. 18	2 p. m.	24.840	79					Nimbus			E.		Rain.
	9 p. m.	24.885	68					Stratus			Calm.		
19	7 a. m.	24.863	83					Clear			N. W.		
	2 p. m.	24.782	89					Nimbus			Calm.		
	9 p. m.	24.813	73					Stratus			Calm.		
20	7 a. m.	24.744	86					do			Calm.		
	2 p. m.	24.683	91					Cumulo-nimbus			E.		Do.
	9 p. m.	24.825	73					Clear					
21	7 a. m.	24.780	84					Stratus			Calm.		
	2 p. m.	24.716	79					Nimbus, cumulus			Calm.		
	9 p. m.	24.736	76					do			Calm.		
22	7 a. m.	24.750	82					Cumulus			Calm.		
	2 p. m.	24.480	86					Nimbus, cumulus			N.		
	9 p. m.	24.668	75					Stratus			W.		
23	7 a. m.	24.745	85					do			N.		
	2 p. m.	24.723	87					Stratus, nimbus			N. E.		
	9 p. m.	24.861	70					Nimbus, cumulus			E.		Do.
24	7 a. m.	24.840	80					Stratus			Calm.		
	2 p. m.	24.766	74					Nimbus			E.		Do.
	9 p. m.	24.866	68					Nimbus, stratus					
25	7 a. m.	24.837	84					Stratus			Calm.		
	2 p. m.	24.776	86					Cumulus, stratus			Calm.		
	9 p. m.	24.767	72					Cumulus			Calm.		
26	7 a. m.	24.826	75					do			Calm.		
	2 p. m.	24.743	90					Cirrus			Calm.		
	9 p. m.	24.766	75					Clear					
27	7 a. m.	24.712	87								Calm.		Constantly clear.
	2 p. m.	24.669	92								N. E.		
	9 p. m.	24.476	76								N. E.		
28	7 a. m.	24.813	96					Cirrus			S. W.		
	2 p. m.	24.822	91					Cumulus			S. W.		
	9 p. m.	24.924	75.5										Sky overcast.
29	7 a. m.	24.896	90					Stratus					
	2 p. m.	24.847	87					Nimbus					
	9 p. m.	24.835	72.5										Do.
30	7 a. m.	24.897	85										
	2 p. m.	24.893	92					Cirrus					
	9 p. m.	24.861	74										
31	7 a. m.	24.863	87					Cumulus					

		2 p. m.	24.794	83.5					Nimbus, stratus				
		9 p. m.	24.875	73								S. E.	Do.
Sept.	1	7 a. m.	24.912	66.5					Cumulus, nimbus				
		2 p. m.	24.811	80									
		9 p. m.	24.777	72					Cumulus				
	2	7 a. m.	24.782	72					Stratus			N.	
		2 p. m.	24.663	92.5					Nimbus, cumulus			N. E.	
		9 p. m.	24.700	69.5					Clear			E.	Shower at 5.00 p. m.
	3	7 a. m.	24.719	85					Cumulus			Calm.	
		2 p. m.	24.656	86					do			E.	
		9 p. m.	24.711	74					Nimbus, stratus			S. W.	
	4	7 a. m.	24.850	80					Clear			Calm.	
		2 p. m.	24.771	84					Cirrus			N. E.	
		9 p. m.	24.743	74					Cumulus			S.	
	5	7 a. m.	24.415	70					Nimbus			Calm.	
		2 p. m.	24.800	75.5					Cirrus			S. E.	
		9 p. m.	25.417	69									
	6	7 a. m.	25.097	59								Calm.	Sky overcast.
		2 p. m.	25.339	58									
		9 p. m.	25.151	58									Rain.
	7	7 a. m.	25.016	55					Nimbus, stratus				
		2 p. m.	25.032	61					Nimbus, cumulus			Calm.	
		9 p. m.	24.991	57.5					Cirrus			S. W.	
	8	7 a. m.	24.872	60								E.	Overcast.
		2 p. m.	24.873	71.5								E.	
		9 p. m.	24.934	60					Clear			Calm.	
	9	7 a. m.	24.879	72					do			N. E.	
		2 p. m.	24.921	66					do			S. W.	
		9 p. m.	24.827	67					do			Calm.	
	10	7 a. m.	24.818	77					do			Calm.	
		2 p. m.	24.784	83					do			Calm.	
		9 p. m.	24.653	63					do			Calm.	
	11	7 a. m.	24.740	70					Cumulus, stratus			Calm.	
		2 p. m.	24.916	69								Calm.	
		9 p. m.	24.839	66					Clear			Calm.	
	12	7 a. m.	24.885	75					Cumulus			Calm.	
		2 p. m.	24.891	73					Cirrus			Calm.	
		9 p. m.	24.858	63								Calm.	
	13	7 a. m.	24.930	62					Clear			Calm.	
		2 p. m.	24.845	69									
		9 p. m.	24.869	60									
	14	7 a. m.	24.816	82					Clear			Calm.	
		2 p. m.											
		9 p. m.	24.786	68									
	15	7 a. m.	24.823	74					Clear			S. E.	
		2 p. m.	24.772	88					Nimbus, cirrus			S.	
		9 p. m.	24.405	72					Clear			S. W.	
	16	7 a. m.	24.838	69					Cumulus			E.	
		2 p. m.	24.702	88									
		9 p. m.	24.694	78									
	17	7 a. m.	24.683	80					Cirrus, stratus			S.	
		2 p. m.	24.593	88					do			N. W.	

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Sept. 17	9 p. m.	24.642	68					Clear			Calm.		
18	7 a. m.	24.929	62					do			Calm.		
	2 p. m.	24.753	66					Cirrus					
	9 p. m.	24.786	55					Clear			Calm.		
19	7 a. m.	24.727	48					Nimbus, stratus					
	2 p. m.	24.686	59					Clear					
	9 p. m.	24.696	49					Cumulus					
20	7 a. m.	24.680	62					Clear			N.		
	2 p. m.	24.645	83					Cumulus			N. E.		
	9 p. m.	24.704	58					Clear					
21	7 a. m.	24.707	76					do			Calm.		
	2 p. m.	24.690	79					do					
	9 p. m.	24.754	62								N. W.		
22	7 a. m.	24.817	54								Calm.		Overcast.
	2 p. m.	24.729	72					Clear			E.		
	9 p. m.	24.910	62					do			Calm.		
23	7 a. m.	24.636	66.5					do			E.		
	2 p. m.	24.524	88					do			E.		
	9 p. m.	24.624	70					do			N. E.		
24	7 a. m.	24.736	49					do					
	2 p. m.	24.631	64					do					
	9 p. m.	24.624	46					do			Calm.		
25	7 a. m.	24.470	63					Cirrus, nimbus			Calm.		
	2 p. m.	24.325	90.5								E.		Do.
	9 p. m.	24.394	51					Few cumuli					
26	7 a. m.	24.498	87					Clear					
	2 p. m.	24.396	86					do			S. E.		
	9 p. m.	24.604	58					do			E.		
27	7 a. m.	24.544	58					do			Calm.		
	2 p. m.												
	9 p. m.												
28	7 a. m.	24.684	51					Cirrus			Calm.		
	2 p. m.	24.660	61					do			E.		
	9 p. m.	24.815	48								E.		Sky overcast.
29	7 a. m.	24.893	54					Clear			Calm.		
	2 p. m.	24.786	64.5					do			N. E.		
	9 p. m.	24.851	52					do			Calm.		
30	7 a. m.	24.818	70					do			Calm.		
	2 p. m.	24.672	74.5					Cumulus			N. E.		

Oct.	1	9 p. m...	24.716	60					Clear			Calm.		
		7 a. m...	24.750	74					do			Calm.		
		2 p. m...	24.669	73					do			Calm.		
		9 p. m...	24.661	74								Calm.		
	2	7 a. m...	24.752	68					Cirrus			Calm.		
		2 p. m...	24.637	81					Cumulus			S.		
		9 p. m...	24.672	64					Clear			Calm.		
	3	7 a. m...	24.767	73					do			E.		
		2 p. m...	24.731	90					do			E.		
		9 p. m...	24.807	55					do			Calm.		
	4	7 a. m...	24.718	59					Cumulus			Calm.		
		2 p. m...	24.708	85					do			Calm.		Heavy east wind during the night of the 4th, commenced again at 9 a. m. of the 5th.
		9 p. m...	24.787	62					Clear			Calm.		
	5	7 a. m...	24.924	87					Stratus, cumulus					
		2 p. m...	24.904	67										Clear and hazy.
		9 p. m...	24.973	55										
	6	7 a. m...	24.912	61					Clear			Calm.		
		2 p. m...	24.898	67					do			E.		
		9 p. m...	24.763	55					do			Calm.		
	7	7 a. m...	24.793	69								Calm.		
		2 p. m...	24.588	88					Cumulus					
		9 p. m...	24.553	66.5								N. E.		
	8	7 a. m...	24.612	66.5								N. W.		
		2 p. m...	24.580	87					Clear			Calm.		
		9 p. m...	24.654	67					do			N. E.		
	9	7 a. m...	24.747	74					do			Calm.		
		2 p. m...	24.676	86					Cirrus			Calm.		
		9 p. m...	24.752	61					Clear			Calm.		
	10	7 a. m...	24.902	50.5					Cumulus, stratus					
		2 p. m...	24.896	67					Clear			E.		
		9 p. m...	25.009	58					do					
	11	7 a. m...	25.080	64					Hazy					
		2 p. m...	24.994	71					do			E.		
		9 p. m...	24.993	56					do			Calm.		
	12	7 a. m...	24.903	74					do					
		2 p. m...	24.742	86								S. E.		Overcast.
		9 p. m...												
	13	7 a. m...	24.770	69.5								N. E.		Do.
		2 p. m...	24.676	76					Hazy			S. E.		
		9 p. m...	24.667	58					Clear			Calm.		
	14	7 a. m...	24.615	65					do					
		2 p. m...	24.454	78.5								Calm.		
		9 p. m...	24.466	64								S. W.		
	15	7 a. m...	24.552	59					Cumulus			Calm.		
		2 p. m...	24.612	63					Nimbus			S. E.		
		9 p. m...	24.747	51.5					do			S. E.		
	16	2 a. m...	24.924	31.5								Calm.		Very hazy.
		7 p. m...	24.708	51								E.		Do.
		9 p. m...	24.670	43								E.		
	17	7 a. m...	24.699	47								N. E.		
		2 p. m...	24.456	45								N. E.		Overcast.
		9 p. m...	24.849	44								S. E.		

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Oct. 18	7 a. m.	24.968	44					Cirrus			Calm.		
	2 p. m.	24.922	51										
	9 p. m.	24.988	35					Clear			Calm.		
19	7 a. m.	24.947	58					do			Calm.		
	2 p. m.	24.846	65					do			Calm.		
	9 p. m.	24.870	43					do			Calm.		
20	7 a. m.	24.794	61					do			Calm.		
	2 p. m.	24.617	70					do			Calm.		
	9 p. m.	24.605	54					do			Calm.		
21	7 a. m.	24.516	61.5					do			Calm.		
	2 p. m.	24.425	58								S.		Overcast.
	9 p. m.	24.356	41										
22	7 a. m.	24.798	32					Clear			Calm.		
	2 p. m.	24.462	34.5					do			Calm.		
	9 p. m.	24.755	31					do			Calm.		
23	7 a. m.	24.620	37					do			Calm.		
	2 p. m.	24.498	45					Cumulus			S. E.		
	9 p. m.	24.518	31								S. W.		
24	7 a. m.	24.518	34.5										Do.
	2 p. m.	24.569	39					Cumulus, stratus			S. E.		
	9 p. m.	24.627	29					Cumulus			Calm.		
25	7 a. m.	24.731	19										Overcast; snow.
	2 p. m.	24.766	25								N.		
	9 p. m.												
26	7 a. m.	24.698	35					Cumulus			Calm.		Snow on ground.
	2 p. m.	24.690	38					Clear			Calm.		
	9 p. m.	24.692	32					do			Calm.		
27	7 a. m.	24.679	43					Cumulus			S. W.		
	2 p. m.	24.612	38								S. E.		Snow all gone except on the main range.
	9 p. m.	24.879	39					Nimbus			Calm.		
28	7 a. m.	24.960	44					Clear			Calm.		
	2 p. m.	24.876	59					do			Calm.		
	9 p. m.	24.876	38					do			Calm.		
29	7 a. m.	24.915	45					do			Calm.		
	2 p. m.	24.823	64					do			Calm.		
	9 p. m.	24.825	37					do			Calm.		
30	7 a. m.	24.652	50					do			Calm.		
	2 p. m.	24.845	54					do			S. W.		
	9 p. m.	24.935	36					do			Calm.		

	31	7 a. m.	24.823	31	29	.88			do			Calm.		
		2 p. m.	24.786	49	40	.52								
		9 p. m.	24.294	32	30	.80			Cirro-cumulus					
Nov.	1	7 a. m.	24.605	44.5	43	.86								
		2 p. m.	24.650	52.5	50.5	.87								Overcast.
		9 p. m.	24.792	44	42	.86			Cirro-cumulus					Do.
	2	7 a. m.	24.916	51	49	.87			Clear			Calm.		
		2 p. m.	24.923	54	50	.76			do			Calm.		
		9 p. m.	24.953	40	34	.63								
	3	7 a. m.	24.835	39	31	.49						Calm.		Hazy.
		2 p. m.	24.705	63	57	.71			Clear			Calm.		
		9 p. m.	24.356	49	42	.60								
	4	7 a. m.	24.732	48	37	.44			Clear			Calm.		
		2 p. m.	24.726	63	46	.37								
		9 p. m.	24.812	40	34.5	.63								
	5	7 a. m.	24.863	56	43	.47								
		2 p. m.	24.738	68	52	.42								
		9 p. m.	24.795	48	44.5	.75						Calm.		Sky overcast.
	6	7 a. m.	24.617	56	54	.89								
		2 p. m.	24.560	70	62	.67						W.		
		9 p. m.	24.652	52	49	.82						E.		Overcast.
	7	7 a. m.	24.793	57	43	.44			Clear			Calm.		
		2 p. m.	24.753	60	56	.80								
		9 p. m.	24.881	44	36	.54								
	8	7 a. m.	24.934	60	46	.44						S. E.		
		2 p. m.	24.920	66	65	.95			Clear			Calm.		
		9 p. m.	25.260	48	50	1.00			do			Calm.		
	9	7 a. m.	25.570	59	46	.47			do			Calm.		
		2 p. m.	25.404	73	65	.68			do			Calm.		
		9 p. m.	25.315	50	47	.81			do			Calm.		
	10	7 a. m.	24.955	51	47	.76			do			E.		
		2 p. m.	24.844	69	65	.81			do			Calm.		
		9 p. m.	24.901	47.5	45	.81			do			Calm.		
	11	7 a. m.	24.913	47	45	.87			do			Calm.		
		2 p. m.	24.374	56	54	.89			do			Calm.		
		9 p. m.	25.037	35	28	.53			do			Calm.		
	12	7 a. m.	24.997	34	27.5	.42			do			Calm.		
		2 p. m.	24.893	47	43	.75								
		9 p. m.	24.804	35	29	.58								
	13	7 a. m.	24.767	53	43	.50								
		2 p. m.	24.676	69	68	.95								
		9 p. m.	24.693	44	35	.50								
	14	7 a. m.	24.542	49	47	.87			Clear			Calm.		
		2 p. m.	24.564	70	67	.87			Cumulus		W.			
		9 p. m.	24.649	57	56	.95			Clear			Calm.		
	15	7 a. m.	24.774	50	40	.50								
		2 p. m.	24.718	67	50	.40								
		9 p. m.	24.711	52	41	.47			Cumulus			Calm.		
	16	7 a. m.	24.902	50	40	.50						N. E.		Hazy.
		2 p. m.	24.805	71.5	54	.41								
		9 p. m.	24.691	55	43.5	.49			Clear			Calm.		
	17	7 a. m.	24.620	67	65	.90			do			W.		Heavy wind blowing.

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Nov. 17	2 p. m.	24.598	58	41	.37			Clear			W.		
	9 p. m.												
18	7 a. m.	24.965	37	30	.54			Clear			Calm.		
	2 p. m.	24.955	44	35	.50			do			N. E.		
	9 p. m.	24.901	28	23	.50			do			Calm.		
19	7 a. m.	24.807	37.5	27	.39			do			W.		
	2 p. m.	24.655	58	41	.37						N. W.		
	9 p. m.	24.635	36	27.5	.42			Clear			Calm.		
20	7 a. m.	24.618	50.5	39	.46			do			Calm.		
	2 p. m.	24.667	55	38	.37			Stratus			S. E.		
	9 p. m.	24.612	32	25	.56								
21	7 a. m.	24.990	34	28	.58			Cumulus			N.		
	2 p. m.	24.547	53	42.5	.50								Overcast.
	9 p. m.	24.507	42										
22	7 a. m.	24.509	39	32	.54								Overcast; snowing on Greenhorn range.
	2 p. m.	24.472	52	41	.47						W.		Overcast.
	9 p. m.	24.689	44	32	.38			Clear			W.		
23	7 a. m.	24.819	40	33.5	.58			do			Calm.		Snow on the range.
	2 p. m.	24.763	46	35.5	.44			do			Calm.		
	9 p. m.	24.816	37	30	.54			do			N.		
24	7 a. m.	24.874	40.5	31.5	.50			do			N.		
	2 p. m.	24.707	55	41.5	.44			Cirrus			W.		
	9 p. m.	24.910	50	39	.46			Clear			N. W.		
25	7 a. m.	24.840	46	36.5	.48			Stratus			W.		
	2 p. m.	24.655	60.5	45	.42			Cirrus			Calm.		
	9 p. m.	24.573	55	40.5	.41			Clear			W.		Heavy gale all p. m.
26	7 a. m.	24.495	53	39	.35			do			W.		
	2 p. m.	24.627	62	43	.33			Cirrus			W.		Heavy gale.
	9 p. m.	24.694	32.5	25.5	.56								
27	7 a. m.	24.615	35	30	.64			Clear			W.		
	2 p. m.	24.620	35	28	.53								
	9 p. m.	24.797	34	27	.57								
28	7 a. m.	24.715	23										
	2 p. m.	24.560	52	40	.44			Clear			W.		Heavy wind all p. m.
	9 p. m.	24.640	50	38	.42			do			W.		
29	7 a. m.	24.714	48	37.5	.44			Cirrus			N. E.		
	2 p. m.	24.683	61	48	.47			do			W.		
	9 p. m.	24.732	50.5	40	.50			Clear			Calm.		
30	7 a. m.	24.702	53.5	43.5	.50			Cirrus			Calm.		

		2 p. m...	24.610	61	47	.44			Stratus		W.	
		9 p. m...	24.522	52	45	.62			Clear		Calm.	
Dec.	1	7 a. m...	24.455	56	42.5	.44			Cumulus		W.	Heavy west wind all night and day.
		2 p. m...	24.337	60.5	46.5	.44			Cirrus			
		9 p. m...	24.305	55	43.5	.49						Heavy bank of clouds over the range.
	2	7 a. m...	24.258	52	42	.50			Cumulus			Shifting wind.
		2 p. m...	24.233	37	30.5	.54					E.	Snowing.
		9 p. m...	24.363	32.5	22						E.	Do.
	3	7 a. m...	24.504	24	20				Clear		E.	Four inches of snow fell last night.
		2 p. m...	24.495	22	23	1.00			do			
		9 p. m...	24.490	30	25				do		Calm.	
	4	7 a. m...	24.446	35	30	.64					Calm.	Overcast.
		2 p. m...	24.440	42.5	35.5	.58			Clear		Calm.	
		9 p. m...	24.541	24								
	5	7 a. m...	24.585	28	29	1.00			Clear		Calm.	
		2 p. m...	24.556	28	23						S.	Do.
		9 p. m...	24.576	29	26	.58			Clear		Calm.	
	6	7 a. m...	24.526	24							Calm.	Do.
		2 p. m...	24.515	29.5	25	.46			Clear		Calm.	
		9 p. m...	24.530	20.5	17							
	7	7 a. m...	24.481	22							Calm.	Overcast; snowing on main range.
		2 p. m...	24.356	33	30	.74			Cirrus			
		9 p. m...	24.462	34	28.5	.56					W.	
	8	7 a. m...	24.685	31.5	27.5	.57			Stratus		N. W.	High wind.
		2 p. m...	24.679	38	31	.53			Clear		Calm.	
		9 p. m...	24.641	30	28	.71			do		Calm.	
	9	7 a. m...	24.769	22								
		2 p. m...	24.666	31								
		9 p. m...	24.632	26					Clear		Calm.	
	10	7 a. m...	24.543	36.5	28	.49					W.	Overcast,
		2 p. m...	24.461	46	36.5	.48			Cirrus		W.	
		9 p. m...	24.483	42	34	.54			Clear		Calm.	
	11	7 a. m...	24.437	36.5	31.5	.64			Nimbus			
		2 p. m...	24.329	42	35	.58						Snowing.
		9 p. m...	24.509	32.5	26.5				Clear			One-half inch of snow.
	12	7 a. m...	24.718	36	29	.54					Calm.	Overcast.
		2 p. m...	24.681	42	32.5	.46			Clear		N. W.	
		9 p. m...	24.853	30	24							
	13	7 a. m...	24.919	30.5	26	.50			Clear		N. W.	
		2 p. m...	24.880	44	34	.46			do		Calm.	
		9 p. m...	24.900	42	33.5	.49			do		Calm.	
	14	7 a. m...	24.798	35	30.5	.64			do		W.	
		2 p. m...	24.946	44	34.5	.46			do		W.	
		9 p. m...	24.827	48	39.5	.52					N. W.	Do.
	15	7 a. m...	24.693	48	39.	.52						Do.
		2 p. m...	24.571	53.5	45	.58			Clear		S. E.	
		9 p. m...	24.591	62.5	49	.47			do		E.	
	16	7 a. m...	24.575	48	42	.65			do		Calm.	
		2 p. m...	24.634	56	45.5	.53			do		W.	
		9 p. m...	24.626	52.5	45	.62			do		N. W.	
	17	7 a. m...	24.604	54.5	44.5	.50			do		N. W.	
		2 p. m...	24.629	54	44	.50			do		W.	

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1873.													
Dec. 17	9 p. m.	24.669	56	44	.49			Clear			S.W.		
18	7 a. m.	24.866	54.5	43	.47			do			W.		
	2 p. m.	24.876	52	41	.47			Few cumulus			W.		
	9 p. m.	24.866	48	40	.56			Clear			S.W.		
19	7 a. m.	24.782	52.5	42	.50			do			S.		
	2 p. m.	24.720	59	38	.28			Few cumulus			S. E.		
	9 p. m.	24.824	45	38	.59			Clear			N. E.		
20	7 a. m.	24.719	44	35	.50			do			Calm.		
	2 p. m.	24.531	42.5	37	.68			do			Calm.		
	9 p. m.	24.521	42	39	.80			do			Calm.		
21	7 a. m.	24.545	42.5	34	.54			do			W.		
	2 p. m.	24.486	48	38	.48			do			N. W.		
	9 p. m.	24.608	38	34	.70			do			Calm.		
22	7 a. m.	24.651	45	38	.59			Stratus			Calm.		
	2 p. m.	24.578	45	34	.43			Clear			Calm.		
	9 p. m.	24.614	39	31.5	.49			do			Calm.		
23	7 a. m.	24.688	41	32	.50						S.W.		Overcast.
	2 p. m.	24.745	44	34	.46			Clear			W.		Snowing most on the range.
	9 p. m.	24.954	36	28	.49			do					
24	7 a. m.	24.991	35.5	28	.53			do			Calm.		
	2 p. m.	24.914	44	39	.68			do			Calm.		
	9 p. m.	24.882	44	39	.68								
25	7 a. m.	24.779	45	36	.51						W.		Overcast.
	2 p. m.	24.993	55	39	.39						W.		Do.
	9 p. m.	24.850	51.5	37.5	.35			Clear			Calm.		Heavy wind during the night.
26	7 a. m.	24.735	49	38	.44			do			Calm.		
	2 p. m.	24.724	44	36	.54			do			Calm.		
	9 p. m.	24.730	33	28	.61			do			Calm.		
27	7 a. m.	24.674	40.5	31	.50			do			Calm.		
	2 p. m.	24.612	46.5	36.5	.48			Cirrus			Calm.		
	9 p. m.	24.621	41.5	33	.54			Clear			Calm.		
28	7 a. m.	24.594	48	35	.37			Cirrus			N. E.		
	2 p. m.	24.551	55	42	.46			Clear					
	9 p. m.	24.614	51	39	.43			do			Calm.		
29	7 a. m.	24.940	36.5	30	.58			do					
	2 p. m.	24.918	37	29	.49			Cirrus					
	9 p. m.	24.921	36.5	29	.54			Clear			Calm.		
30	7 a. m.	24.784	42	32.5	.46			Cirro-stratus			Calm.		
	2 p. m.	24.743	54	41.5	.40			Cirrus			W.		

	9 p. m.	24.945	52	37.5	.34			Clear			N. W.	
31	7 a. m.	24.600	52	38	.36			Cirrus			N. W.	
	2 p. m.	24.537	60	42	.35			Cirro-cumulus			W.	Heavy winds from westward.
	9 p. m.	24.616	50	39	.46			Clear			Calm.	
1874. Jan. 1	7 a. m.	24.614	50	36	.35			do			N. W.	
	2 p. m.	24.542	58	42	.39			Few stratus			N. W.	
	9 p. m.	24.547	53	40.5	.37			Clear			Calm.	
2	7 a. m.	24.406	52	40	.43			do			Calm.	
	2 p. m.	24.308	58	44	.44			Nimbus			W.	
	9 p. m.	24.154	50	42	.57						Calm.	Overcast.
3	7 a. m.	24.124	41	34	.58						N.	Overcast and snowing.
	2 p. m.	24.346	40.5	32	.53						S.	Do.
	9 p. m.	24.599	22.5	20				Clear			Calm.	Two inches of snow on the ground.
4	7 a. m.	24.782	26	23				do			Calm.	
	2 p. m.	24.760	24.5					do			Calm.	
	9 p. m.	24.787	18	12				do			Calm.	
5	7 a. m.	24.683	22	18				do			Calm.	
	2 p. m.	24.616	47	36	.44			Cirrus			Calm.	
	9 p. m.	24.776	36	28	.49							
6	7 a. m.	24.906	34	28	.57			Clear			Calm.	
	2 p. m.	24.790	44	35	.50			do			Calm.	
	9 p. m.	24.753	38	30	.48			do			Calm.	
7	7 a. m.	24.656	44	32	.38						W.	Sky overcast.
	2 p. m.	24.593	55	40	.41			Cumulus			N. W.	Snow all gone.
	9 p. m.	24.624	48.5	37	.44			Clear			Calm.	
8	7 a. m.	24.557	46	33.5	.36			Nimbus, cirrus			N. W.	
	2 p. m.	24.555	56	40	.39			Cumulus			E.	
	9 p. m.	24.662	48.5	36	.40			Clear			E.	Heavy wind.
9	7 a. m.	24.662	46	35	.44						N. W.	Overcast.
	2 p. m.	24.550	56	41	.41			Cirro-cumulus			W.	
	9 p. m.	24.627	47.5	34	.36							
10	7 a. m.	24.613	46	35.5	.44			Few cirrus			Calm.	
	2 p. m.	24.490	56	40	.39			Clear			W.	
	9 p. m.	24.570	46.5	35.5	.44			do			Calm.	
11	7 a. m.	24.730	34.5	30	.64						W.	Sky overcast.
	2 p. m.	24.640	35	28	.53						Calm.	Do.
	9 p. m.	24.596	34	28	.57						W.	Do.
12	7 a. m.	24.564	40.5	31	.50						S.W.	Do.
	2 p. m.	24.521	49.5	38	.44			Nimbus			Calm.	
	9 p. m.	24.579	38	32	.59			Clear			Calm.	
13	7 a. m.	24.662	36	26	.38						Calm.	
	2 p. m.	24.759	32	25							S.	Do.
	9 p. m.	24.799	32	25							Calm.	Do.
14	7 a. m.	24.865	32.5	25.5							Calm.	Foggy.
	2 p. m.	24.797	36	27	.42						S. E.	Overcast.
	9 p. m.	24.761	34	26				Clear			Calm.	
15	7 a. m.	24.661	36	27	.42			Cumulo-stratus, nimbus			Calm.	
	2 p. m.	24.534	49	37	.40						N. E.	Do.
	9 p. m.	24.549	46	36	.48			Clear			W.	
16	7 a. m.	24.492	47	35	.40			Cirrus			N.	
	2 p. m.	24.341	56	45	.53			Few stratus, cumulus			W.	

Meteorological register at Cañon City, Colo.—Continued.

Date.	Hour.	Barometer at 32° F.	Dry bulb.	Wet bulb.	Relative humidity.	Maximum.	Minimum.	CLOUDS. Kind.	CLOUDS. Direct'n from.	CLOUDS. Amount.	WIND. Direction.	WIND. Amount.	Remarks.
1874.													
Jan. 16	9 p. m.	24.346	54	41	.40						W.		Overcast.
17	7 a. m.	24.338	52.5	44	.58			Cirrus			Calm.		
	2 p. m.	24.311	56.5	44	.49						N. E.		Do.
	9 p. m.	24.312	50	40	.50			Clear			Calm.		
18	7 a. m.	24.290	44	36	.54						Calm.		Do.
	2 p. m.	24.410	51	42	.53						Calm.		Overcast; snowing on the range, 15 miles south.
	9 p. m.	24.719	40	35	.68						N. E.		Overcast; snowing.
19	7 a. m.	24.609	40	34	.63			Cirrus			S. W.		
	2 p. m.	24.524	36	31	.64			Clear			Calm.		Snow gone.
	9 p. m.	24.461	36	31	.64						Calm.		Foggy.
20	7 a. m.	24.315	38	30	.48			Clear			Calm.		
	2 p. m.	24.206	48	38	.48			Nimbus			Calm.		
	9 p. m.	24.313	36					Clear			Calm.		
21	7 a. m.	24.650	33.5	24.5				Cumuli			W.		
	2 p. m.	24.378	36.5	30.5	.58						Calm.		Snowing.
	9 p. m.	24.394	32	24							Calm.		Overcast.
22	7 a. m.	24.431	22	22	1.00			Cirrus			Calm.		
	2 p. m.	24.386	34	29	.63						N.		Do.
	9 p. m.	24.498	34	30	.69			Clear			W.		Snow gone.
23	7 a. m.	24.771	19.5	15				do			N.		
	2 p. m.	24.810	29	26				Few cumulis			N. W.		
	9 p. m.	25.006	21					Clear			Calm.		
24	7 a. m.	25.076	24.5	23	.76			do			N.		
	2 p. m.	25.074	41	30	.42			do			Calm.		
	9 p. m.	25.292	32	27				do			Calm.		
25	7 a. m.	24.942	32	24				Cirrus			N.		
	2 p. m.	24.809	49	36	.33			Clear			Calm.		
	9 p. m.	24.842	40	32	.53			do			Calm.		
26	7 a. m.	24.613	34	27				Cirrus			N. E.		
	2 p. m.	24.406	50.5	37	.39			Clear			Calm.		
	9 p. m.	24.566	44	36	.54			do			Calm.		
27	7 a. m.	24.561	46	38	.55			do			Calm.		
	2 p. m.	24.724	40	31	.50			do			N. E.		
	9 p. m.	24.730	49	36	.37			do			Calm.		
28	7 a. m.	24.924	40	32	.53			do			Calm.		
	2 p. m.	24.839	57	47	.56			do			W.		
	9 p. m.	24.861	46	37	.51			do			Calm.		
29	7 a. m.	24.733	46	38	.55			do			Calm.		

		2 p. m.	24.673	52	45	.62			do			W.	
		9 p. m.	24.763	43	40	.80			do			Calm.	
	30	7 a. m.	24.780	40	35	.68						W.	Sky overcast.
		2 p. m.	24.664	44	38	.63			Nimbus			S.	
		9 p. m.	24.644	44	38	.63			do			Calm.	
	31	7 a. m.	24.596	35	31	.70						Calm.	Snowing. Clear and calm at 9 a. m. and snow nearly gone.
		2 p. m.	24.563	45.5	40	.69			Clear			Calm.	
		9 p. m.	24.692	35	30	.64						E.	Snowing again.
Feb.	1	7 a. m.	24.776	19	26							Calm.	Foggy.
		2 p. m.	24.693	39	35	.70			Clear			Calm.	
		9 p. m.	24.719	32.5	28	.64			do			Calm.	
	2	7 a. m.	24.674	33	28	.62			do			Calm.	
		2 p. m.	24.618	43	36	.58			Cumulus			Calm.	
		9 p. m.	24.726	39	33	.59			Clear			Calm.	
	3	7 a. m.	24.697	36	32	.70						Calm.	Overcast.
		2 p. m.	24.631	41	36	.68						Calm.	Do.
		9 p. m.	24.658	38	33	.64						Calm.	Do.
	4	7 a. m.	24.642	37	33	.70						Calm.	Do.
		2 p. m.	24.562	41.5	38	.74						S. E.	Do.
		9 p. m.	24.605	35	30.5	.64			Clear			Calm.	
	5	7 a. m.	24.725	24	29				do			Calm.	
		2 p. m.	24.739	39.5	33	.59			Cirrus			S.	
		9 p. m.	24.785	34	29	.63			Clear				
	6	7 a. m.	24.742	32	27				do			N. E.	
		2 p. m.	24.765	44	36	.54			do			W.	
		9 p. m.	24.766	42	35.5	.58			do			N. W.	
	7	7 a. m.	24.579	38	30	.48						S	Do.
		2 p. m.	24.466	49	40	.52			Clear			Calm.	
		9 p. m.	24.590	44	36	.54			do			Calm.	
	8	7 a. m.	24.866	34	30.5	.69						Calm.	Snowing.
		2 p. m.	24.849	40	36	.73						S. E.	Overcast.
		9 p. m.	24.889	36	32	.70						Calm.	Do.
	9	7 a. m.	24.779	34.5	30.5	.69			Cirrus			Calm.	
		2 p. m.	24.761	46.5	39.2	.60			Clear			Calm.	
		9 p. m.	24.030	43	36	.58			do			Calm.	
	10	7 a. m.	24.687	45	30.5				Nimbus			N.	
		2 p. m.	24.573	54	39.5	.34			Stratus				
		9 p. m.	24.620	48.5	36	.41			Clear			W.	
	11	7 a. m.	24.614	48	40	.56			Stratus			N.	
		2 p. m.	24.381	55	44	.53			Cirrus			Calm.	
		9 p. m.	24.127	46	43.5	.80						Calm.	Overcast.
	12	7 a. m.	24.089	42	37	.68						Calm.	Snowing.
		2 p. m.	24.034	44	39	.68						S. W.	Overcast; snow 2 inches deep.
		9 p. m.	24.291	48	41	.60						Calm.	Overcast.
	13	7 a. m.	24.273	35	30	.64			Clear			Calm.	
		2 p. m.	24.354	42	32	.46			do			Calm.	
		9 p. m.	24.630	41	33	.54			do			Calm.	
	14	7 a. m.	24.457	40.5	35	.68			do			W.	
		2 p. m.	24.438	51	41	.50			Cumulus			W.	
		9 p. m.	24.412	43	42.5	.93			Clear			Calm.	